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FIFTEEN YEARS' OBSERVATION OF CHILDREN WITH RHEUMATIC HEART DISEASE

WILLIAM D. STROUD, M.D.

AND

PAUL H. TWADDLE, M.D.

PHILADELPHIA

It again seems of interest to present a summary of our results at the Children's Heart Hospital of Philadelphia in caring for children who have been admitted threatened with or suffering from cardiovascular damage as a result of rheumatic fever. A previous report [1] presented data from the Children's Heart Hospital for the period June 1922 to January 1932. The present review is a study of the cases seen between June 1922 and June 1937.

People in the United States assumed an early role in the institutional care of children with heart disease and have established a number of institutions, among them the House of the Good Samaritan (Boston), the Irvington House on the Hudson (New York), Sunset Camp (Bartlett, Ill.), Ridge Farm (St. Louis) and the Children's Heart Hospital (Philadelphia). England, under a nationwide system, has made remarkable progress in developing resources for the care of children with heart disease in convalescent hospitals, and it was estimated in 1938 [2] that there are 1.7 beds for each thousand elementary school children.

It has been stated that the ultimate results obtained through returning children from general hospitals to their homes or foster homes and the follow-up treatment through social service and visiting nurse departments of these hospitals are as satisfactory as the results following treatment in convalescent institutions. The final answer to this must be delayed until further data are accumulated. This report will present our results to March 1939, but since our children have not all been followed an equal number of years we are faced with the common problem of finding data with which a comparison can be made. We do feel that there are certain factors, evident at present, which justify the existence of care in a convalescent hospital:

1. Treatment varies with the individual case, but group control, under the instruction of a competent staff, provides that the medical care will be adequate and that the individual child's activity will be adjusted to the functional capacity of his heart. Such is the opinion of Anderson and his co-workers [3] at Cincinnati, who add that "of great assistance in establishing the new routine of living were the institutions such as the Children's Convalescent Home, the Condon School for Crippled Children and the County Chronic Disease Hospital."

2. Jones [4] emphasizes that a specialized, competently trained physician is desirable in handling cases of rheumatic fever, the training being comparable to that of those working with cases of tuberculosis.

3. In a group, children cooperate better in the rest treatment for this condition, and with teachers as a part of the staff it is possible to carry them along with their classes during their long convalescence.

4. Silver [5] studied a small group of patients under care at a residential school for cardiac children. Most children adapted themselves well emotionally and socially to their physical handicap. "The utilization of a residential school for cardiac children," he claims, "offers an opportunity for the establishment of a successful mental hygiene program and leads to the disappearance, in most of these children, of undesirable mechanisms established in the home."

5. Parents as well as the children are educated, through visiting periods, lectures and personal interviews, on the importance of rest, diet, hygiene, dangers of contact infections and the like.

6. A home environment which may be a definite handicap is eliminated. Paul and Salinger [6] have noted the spread of rheumatic fever in families, and an infectious basis for the disease is suggested. Many times, too, parents have complained that with large families and inadequate finances they cannot alter their household routine to care adequately for their child.

7. Furthermore, such hospital groups offer valuable material for the instruction of medical students as well as graduate students interested in this type of work. Research into the value of newer methods of treatment and prevention of reactivations of rheumatic fever is assisted by a series that can better be controlled.

Miss Elizabeth Knowles, financed by the Philadelphia Heart Association, has made an intensive effort to get in touch with the 685 children who have received convalescent care at the Children's Heart Hospital from 1922 to 1937. This figure (685) does not include eighty-eight children who are excluded from the study because they stayed at the hospital less than one month or because they had congenital heart disease or were diagnosed as not having heart disease.

This work was done through the Robinette Foundation of the University of Pennsylvania and the M. W. Stroud Jr. Fellowship in Cardiology of the Pennsylvania Hospital.

1. Stroud, W. D.; Goldsmith, M. A.; Polk, D. S., and Thorp, F. Q.: Ten Years' Observation of Children with Rheumatic Heart Disease, J. A. M. A. **101**: 502-506 (Aug. 12) 1933.

2. Schlesinger, Bernard: Milroy Lecture, Lancet **1**: 649-654 (March 19) 1938.

3. Anderson, N. A.; Rauh, L. W., and Lyon, R. A.: Heart Disease in Children, J. Med. **20**: 63 (April) 1939.

4. Jones, T. D.: Heart Disease in Children, Am. J. Pub. Health **28**: 637-643 (May) 1938.

5. Silver, H. B.: The Emotional and Social Development of Girls with Heart Disease, J. Pediat. **12**: 218-242 (Feb.) 1938.

6. Paul, J. R., and Salinger, Robert: Spread of Rheumatic Fever, J. Clin. Investigation **10**: 33 (April) 1931.

In a report in 1930 [7] the requirements for admission to the Heart Hospital were given as follows:

1. Age limit: Boys, 3 to 12 years; girls, 3 to 13 years.
2. Children shall have either possible or potential cardiovascular disease.
3. No patients who have had congestive circulatory failure or with a hopeless prognosis shall be admitted.
4. Before admission each child shall spend at least two weeks in a hospital.
5. So far as possible all foci of infection should be removed.
6. Parents shall agree that children will remain in the hospital from three to six months or longer, at the physician's discretion.

The group of 685 children included 334 boys and 351 girls—a ratio influenced by the requirements for admission. We were unable to locate 105 (15.3 per cent) of the group, and an additional 144 children (21 per cent) have died.

RACIAL DISTRIBUTION

A tabulation of the group according to race is presented in table 1. Its significance is questioned, however, when one realizes that nearly one half of the patients are sent from hospitals and physicians in South Philadelphia, where the Italian and Jewish populations are most concentrated, and that certain races are more prompt than others to avail themselves of these institutional advantages.

From other reports we believe that there is an apparent resistance among Negroes to rheumatic fever. Thus Ash [8] found that in the clinic of the Children's Hospital in Philadelphia, where the white and Negro children are about evenly divided, the rheumatic children were 83 per cent white and 17 per cent Negro. Sutton,[9] at Bellevue Hospital in New York, found the percentage of Negroes in the cardiac clinic only one third of the percentage of Negroes in the general pediatric clinic. Wilson and her co-workers [10] found that "only 4.6 per cent of the children were colored although the clinic draws from a colored district." This paper refers to the work of Wood, Jones and Kimbrough,[11] who found

TABLE 1.—*Racial Distribution*

Racial Group	Number	Per Cent
Total children	685	100.0
American	181	26.4
Italian	155	22.6
Jewish	109	15.9
Negro	27	3.9
Irish	25	3.7
Polish	13	1.9
All other nationalities	30	4.4
Nationality unknown	145	21.2

that rheumatic heart disease "seemed to be less common among the colored people than the white people in Virginia." In New York City [9] there seems to be a susceptibility to rheumatic heart disease among the Italians, while the Jews are afflicted to a degree less than their general clinic percentage. The Irish apparently have a rather high tendency to rheumatism, although it is noted that the Irish in Ireland do not have a high rate for heart disease. In Philadelphia, regardless of race, it was found that 0.91 per cent of public school children had organic heart disease.[12]

RHEUMATIC HEART DISEASE AND ABILITY TO WORK

Of the total group, 249 children (36.3 per cent) are attending school, and it is gratifying to find that 117 (17.1 per cent) are otherwise employed in spite of their cardiovascular handicap, while only thirty-nine (5.7 per cent) who are able to work are unemployed. Table 2 presents a record of the children discharged from the hospital by sex and by ability to work, while table 3 records the ages to March 1, 1939, and the ability to work.

TABLE 2.—*Children Discharged from the Children's Heart Hospital by Sex and Ability to Work: 1922-1937*

Ability to Work at Time of Follow-Up	Both Sexes		Male		Female	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total children	685	100.0	334	100.0	351	100.0
Attending school	249	36.3	132	39.5	117	33.3
Working	117	17.1	42	12.6	75	21.3
Unemployed	39	5.7	23	6.9	16	4.6
Unable to work*	21	3.1	8	2.4	13	3.7
In hospital†	10	1.5	4	1.2	6	1.7
Deceased	144	21.0	75	22.4	69	19.7
No record (out of town)	38	5.5	22	6.6	16	4.6
Unable to locate‡	67	9.8	28	8.4	39	11.1

* Includes one girl unable to work because of tuberculosis.
† Includes two boys and one girl hospitalized for illnesses other than heart disease.
‡ Seven of these were located but incomplete information was obtained.

From the results it would be difficult to state that sex had any influence on the ultimate prognosis. This is in agreement with the general observations of Schlesinger [12a] and with the experience at the Children's Hospital of Philadelphia,[8] where the death rate for the sexes was similar to that of the group as a whole. There seems to be general agreement that infection with rheumatic fever is slightly more prevalent among females than among males.[13] The ability for activity as noted in table 3 among those living shows a tendency to decrease with the older age groups (82 per cent of those under 15 years and 67.4 per cent of those over age 15).

In evaluating the ability to work in relationship to the length of stay at the Heart Hospital, it should be noted that only the first admission is counted; the days following a period in a general hospital, where a patient may have been sent for an acute episode, are added to the days of hospitalization at the Heart Hospital, and the total stay is counted as one admission. The largest group of children (36.5 per cent) stayed from three to five months, and the next largest group (30.4 per cent) from six to eight months. In table 4 it is seen that of the 110 children who stayed less than three months a large number (41 per cent) are dead, and it may be assumed that this percentage would be increased if the fate of the remaining nineteen children were known. Many of this group of children were probably not fair selections for convalescent hospital care, for after a short stay they had to be returned to general hospitals because of advanced illness. Many

7. Stroud, W. D.: The Treatment of Rheumatic Cardiovascular Disease in Children, M. Clin. North America **13**: 845-856 (Jan.) 1930.
8. Ash, Rachel: The Prognosis of Rheumatic Infection in Childhood, Am. J. Dis. Child. **52**: 280-295 (Aug.) 1936.
9. Sutton, L. P.: Observations on Certain Etiological Factors in Rheumatism, Am. Heart J. **4**: 145-152 (Dec.) 1928.
10. Wilson, May G.; Lingg, Claire, and Croxford, Geneva: Statistical Studies Bearing on Problems in the Classification of Heart Disease: III. Heart Disease in Children, Am. Heart J. **4**: 164-196 (Dec.) 1928.
11. Wood, J. E., Jr.; Jones, T. D., and Kimbrough, R. D.: The Etiology of Heart Disease, Am. J. M. Sc. **172**: 185 (Aug.) 1926.
12. Cahan, J. M.: Incidence of Heart Disease in School Children, J. A. M. A. **92**: 1576-1579 (May 11) 1929.
12a. Schlesinger, Bernard: The Public Health Aspect of Heart Disease in Children, Milroy Lecture, Lancet **1**: 593-599 (March 12) 1938.
13. Anderson, Rauh and Lyon.[3] Ash.[8] Sutton.[9] Wilson, Lingg and Croxford.[10]

of the fatal cases were admitted during the first few years of the institution before a suitable basis for selection of cases was found.

Considering the groups able to carry on reasonably normal activity (in school, working, unemployed), it does not appear that a prolonged stay at the hospital has materially increased the number who are active, nor has the death rate been reduced (excluding those who remained from one to two months). Yet those staying longest were usually hospitalized in relationship to the duration of their rheumatic activity (mainly determined by the sedimentation rate of the blood) during their period of observation.

As seen in table 5, the functional classification [14] at the time of discharge supports this contention. It can be seen that 33.2 per cent of those who were hospitalized for from three to five months had symptoms at discharge (i. e. classes II A, II B, III). Similarly, 50.5 per cent of the children who remained in the hospital from six to eight months had symptoms at discharge; in the nine to eleven month group 55 per cent and in the group staying longer than a year 75.7 per cent. As has already been noted, many of those remaining

TABLE 3.—*Children Classified by Age and by Ability to Work at the Time of Follow-Up*

Ability to Work at Time of Follow-Up	Total Children	Age at Time of Follow-Up*											
		Under 10 Yr.		10-14 Yr.		15-19 Yr.		20-24 Yr.		25 Yr. and Over		Deceased	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total children	685	11	100.0	146	100.0	220	100.0	127	100.0	37	100.0	144	100.0
Attending school	249	9	81.8	120	82.2	113	51.4	7	5.5	..	....	...	.....
Working	117	..	....	...	....	35	15.9	61	48.0	21	56.8	...	.....
Unemployed	39	..	....	...	....	25	11.4	12	9.5	2	5.4	...	.....
Unable to work†	21	..	....	5	3.4	16	4.5	5	3.9	1	2.7	...	.....
In hospital‡	10	1	9.1	3	2.1	6	2.7	..	...	..	...	...	.....
Deceased	144	..	....	...	....	..	...	..	...	..	...	144	100.0
No record (out of town)	38	1	9.1	7	4.8	15	6.8	11	8.7	4	10.8	...	.....
Unable to locate§	67	..	....	11	7.5	16	7.3	31	24.4	9	24.3	...	.....

* Age as of March 1, 1939.
† Includes one girl handicapped by tuberculosis.
‡ Includes two boys and one girl hospitalized for illnesses other than heart disease.
§ Seven of these were located but incomplete information was obtained.

TABLE 4.—*Children Classified by Length of Stay at Children's Heart Hospital and Ability to Work at Time of Follow-Up*

Ability to Work at Time of Follow-Up	Total Children	Length of Stay at Children's Heart Hospital									
		1-2 Months		3-5 Months		6-8 Months		9-11 Months		12 Months and Over	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total children	685	110	100.0	250	100.0	208	100.0	80	100.0	37	100.0
Attending school	249	16	14.5	84	33.6	89	42.8	41	51.3	19	51.4
Working	117	19	17.3	58	23.2	30	14.4	9	11.3	1	2.7
Unemployed	39	8	7.3	12	4.8	14	6.7	3	3.7	2	5.4
Unable to work*	21	3	2.7	7	2.8	6	2.9	3	3.7	2	5.4
In hospital†	10	..	....	3	1.2	3	1.5	2	2.5	2	5.4
Deceased	144	45	40.9	43	17.2	35	16.8	14	17.5	7	18.9
No record	105	19	17.3	43	17.2	31	14.9	8	10.0	4	10.8

* Includes one girl handicapped by tuberculosis.
† Includes three children hospitalized for illnesses other than heart disease.

TABLE 5.—*Length of Stay at the Children's Heart Hospital Compared with Functional Classification on Discharge*

Length of Stay at Children's Heart Hospital	Total Children		Functional Classification on Discharge													
			Class I		Class II A		Class II B		Class III		Class E		Class F		Not Classified	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total children	685	100.0	152	22.1	192	28.0	68	9.9	59	8.6	38	5.5	98	14.3	78	11.4
1-2 mo.	110	16.0	19	17.2	19	17.2	14	12.7	26	23.6	6	5.5	10	9.1	16	14.5
3-5 mo.	250	36.5	63	25.2	45	18.0	25	10.0	13	5.2	24	9.6	46	18.4	34	13.6
6-8 mo.	208	30.4	52	25.0	77	37.0	15	7.2	13	6.3	6	2.9	24	11.5	21	10.0
9-11 mo.	80	11.7	13	16.2	31	38.7	10	12.5	3	3.8	1	1.5	15	18.8	7	8.8
12 mo. and over	37	5.4	5	13.5	20	54.1	4	10.8	4	10.8	1	2.7	3	8.1	..	...

TABLE 6.—*Relation Between Present Ability to Work and Functional Classification on Discharge from the Children's Heart Hospital*

Ability to Work at Time of Follow-Up	Total Children	Functional Classification on Discharge						
		Class I	Class II A	Class II B	Class III	Class E	Class F	Not Classified
Total children	685	152	192	68	59	38	98	78
Attending school	249	75	88	10	1	13	61	1
Working	117	30	26	7	4	11	11	28
Unemployed	39	11	12	5	3	3	4	1
Unable to work*	21	5	8	3	..	..	2	3
In hospital†	10	2	4	2	..	..	2	..
Deceased	144	9	35	28	49	3	1	19
No record	105	20	19	13	2	8	17	26
		59.1%	76.3%	65.6%	32.3%	13.5%	71.1%	77.5%

* Includes one girl handicapped by tuberculosis.
† Includes three children hospitalized for illnesses other than heart disease.

14. Criteria for the Classification and Diagnosis of Heart Disease, New York Tuberculosis and Health Association, New York, Sixth Printing of Third Edition, 1938 (Copyright 1932).

less than three months were discharged to general hospitals, and in this group 53.6 per cent were discharged with symptoms.

To follow further the functional classification at the time of discharge from the hospital, it is interesting to see how this factor has ultimately influenced the ability

TABLE 7.—*Children Classified by Year of Discharge and Medical Supervision at Time of Follow-Up*

		Present Medical Supervision					No Record	
Year of Discharge	Total Children	Clinic	Private Physician	In Hospital	No Medical Care	Deceased	Out of Town	Unable to Locate
Total	685	192	104	10	132	144	38	62
1937	25	15	6	1	1	1	1	..
1936	34	13	7	3	3	6	2	..
1935	30	16	10	1	2	..	..	1
1934	52	28	5	2	7	8	..	2
1933	66	20	12	1	14	3	3	3
1932	86	25	16	1	21	13	4	6
1931	58	15	10	..	15	12	3	2
1930	52	13	7	..	7	8	10	6
1929	43	15	10	1	10	5	1	1
1928	37	5	2	..	11	13	..	6
1927	29	6	3	..	7	7	3	3
1926	43	5	5	..	5	18	4	6
1925	31	3	2	..	8	10	4	4
1924	40	3	3	..	7	14	1	12
1923	44	1	6	..	12	17	1	7
1922	15	..	..	..	2	9	1	3

of these children to carry on an active useful existence (table 6). Of the total number 59.1 per cent are able to go to school, are working or are able to work. For the subgroups the percentages are class I 76.3 per cent, class II A 65.6 per cent, class II B 32.3 per cent, class III 13.5 per cent, class E 71.1 per cent and class F 77.5 per cent. This summary supports our natural

TABLE 8.—*Deceased Patients Classified by Cause of Death and Age at Death*

		Cause of Death					
Age at Death	Total Children	Congestive Heart Failure	Acute Rheumatic Infection	Infectious Endocarditis	Sudden Death	Pneumonia	Non-cardiac Deaths
All ages	144	104	11	9	9	5	6
5 years	2	2	..	..	..	..	..
6 years	4	1	1	1	..	..	1
7 years	5	5	..	..	..	..	..
8 years	12	9	2	..	1	1	..
9 years	5	2	2	..	1	..	..
10 years	11	8	..	1	1	1	..
11 years	16	14	1	..	..	..	1
12 years	20	16	2	..	1	1	..
13 years	21	18	1	1	..	1	..
14 years	10	8	1	1	..	..	..
15 years	10	6	..	2	1	..	1
16 years	7	4	1	..	..	..	2
17 years	5	5	..	..	..	..	..
18 years	2	1	..	..	1	..	..
19 years	3	1	..	1	..	..	1
20 years	2	1	..	..	1	..	..
21 years	3	2	..	..	1	..	..
22 years	2	..	..	1	1	..	..
23 years	..	..	..	..	..	..	..
24 years	1	..	..	..	..	1	..
25 years	..	..	..	..	..	..	..
26 years	1	..	..	1	..	..	..
27 years	..	..	..	..	..	..	..
28 years	1	1	..	..	..	..	..

assumption that, as a group, an early estimation of the functional capacity is an index to the prognosis.

Table 6 might serve to call attention to the importance of rehabilitation and placement in industry of those handicapped with cardiovascular disease.[15] "It seems questionable whether physical effort is responsible for the production of cardiovascular disease or plays as large a part in the progression of cardiovascular disease as has been previously believed. If this is true the training of cardiac patients and their placement in industry constitutes as great a responsibility for the physician as any other form of therapeutics—in fact in class I and II A a much more important responsibility than medication or other forms of therapy."

15. Stroud, W. D.: The Rehabilitation and Placement in Industry of Those Handicapped with Cardiovascular Disease, J. A. M. A. **105**: 1401 (Nov. 2) 1935.

MORTALITY

Of our total number of children, 144 (21 per cent) have died. Another 15 per cent are either out of town or could not be located. Since we have felt that during the first few years of the institution the wrong type of case was accepted by the hospital and that the follow-up in these cases was inadequate, we are not surprised to find that the mortality rate for the first four and a half year period is unnecessarily high (table 7).

Thus eliminating the years 1922 through 1926 and determining the loss of life among our discharges from

TABLE 9.—*Deceased Patients Classified by Age at Primary Rheumatic Manifestation and Time Elapsing Before Death*

		Duration of Time Elapsing Between First Manifestation and Death						
Age at Primary Manifestation	Total Children	Less Than 1 Yr.	1-2 Yr.	3-5 Yr.	6-8 Yr.	9-11 Yr.	12 Yr. and Over	Unknown*
All ages.....	144	8	20	41	22	15	8	30
3 years.....	13	..	..	5	1	5	1	1
4 years.....	9	..	1	3	3	1	1	..
5 years.....	18	1	1	2	10	3	..	1
6 years.....	17	1	4	8	3	..	1	..
7 years.....	20	1	5	8	1	3	2	..
8 years.....	10	2	1	7	..	..	..	..
9 years.....	11	2	2	3	2	2	..	..
10 years.....	9	..	4	2	..	1	2	..
11 years.....	5	..	1	2	1	..	1	..
12 years.....	4	1	1	1	1	..	..	..
13 years.....	1	..	..	..	..	..	..	1
No history†...	13	..	..	..	..	..	..	13
No record‡....	14	..	..	..	..	..	..	14

* Includes the six children whose deaths were due to causes other than heart disease.
† No history of rheumatic fever, chorea or carditis could be obtained.
‡ Age at primary manifestation unknown, or record of rheumatic history previous to admission not available.

1927 to 1937, we find a mortality of 14.8 per cent, or seventy-six deaths. Of this modified group only twenty-seven children (5.3 per cent) are out of town and thirty (5.9 per cent) have not been located. According to a report from the House of the Good Samaritan in Boston,[4] 24.2 per cent of their 1,000 patients, with an average follow-up of ten years, are dead. In a ten year follow-up of 1,000 patients at the County Convalescent Heart Hospital for Children at West Wickham, England,[16] for patients with acquired heart disease, there was a mortality of 12.3 per cent—an excellent record with only an additional 6 per cent of patients in poor health. In the first ten years (1920-1930) of the Irvington House[17] 24 per cent of the patients had died at the time of the report. Coombs,[18] reporting on 253 patients with cardiac infection in Bristol, England, showed that 21.4 per cent had died within ten years after the primary manifestation of rheumatic fever. This percentage is identical with that previously reported from the Children's Heart Hospital in the ten year study.[1] In a group of 395 patients

16. Schlesinger (footnotes 2 and 19).
17. Halsey, R. H.: Irvington House: The First Ten Years—An Analysis of the Mortality Records, 1920-1930, printed in pamphlet form January 1938.
18. Coombs, C. F.: Rheumatic Heart Disease, New York, William Wood & Co., 1924.

without institutional convalescent care reported on by Wilson, Lingg and Croxford,[10] only 11.9 per cent had died in ten years.

A special study of the deceased patients was made in connection with this report. The cause of death was sought for each one of the 144 fatalities. A satisfactory report was obtained on all but two; in one of these death was said to be due to acute bronchitis and in the other case to "grip with complications." We assume that these were noncardiac deaths and they are so listed in table 8. This table reveals that congestive heart failure claims the largest group (104 patients); eleven apparently died of acute rheumatic infection without signs of decompensation, nine died of bacterial endocarditis (three acute and six subacute), nine died suddenly (one from a pulmonary infarct, five from embolism and three from causes not definitely stated), five died of pneumonia and six died of noncardiac causes. Information obtained concerning the presence of auricular fibrillation in the fatal cases is rather meager. Two of the cases of sudden death were accompanied by auricular fibrillation (age of onset unknown), while in three there was no fibrillation, and for the remaining four this information was not learned. Among those who died of congestive heart failure, auricular fibrillation was present in thirteen and absent in nineteen and there was no record for the remaining seventy-two. Five patients had auricular fibrillation starting shortly before death; four had had fibrillations for some time—one for as long as five years. The ages of onset of auricular fibrillation were one at 7 years, one at 8 years, one at 11 years, three at 13 years, one at 16 years, one at 19 years and one at 23 years.

The youngest patient to die was 5 years old and the oldest 28 years. Eighty-one per cent of deaths occurred before the age of 16, with the heaviest grouping between ages 8 to 16. This may be significant for the surviving children, since 75 per cent of them are now over 16 years of age. It appears that the children who live through the adolescent period have a good chance of reaching maturity. Wilson and her associates[10] note that at the age of about 12 years the tendency to acute infection begins to diminish. Schlesinger[12a] stresses his conviction that puberty is the determining period at which the power of resistance to rheumatic infection increases, cutting down on the number of recurrences. One of our patients died of active rheumatic fever at 16 years of age but none at an older age.

There is uniformity of opinion as to the age at which rheumatic fever usually begins its course. In our group the largest number of first attacks occurred at the age of 7 years. From other studies the average ages at onset are 8 years (Boston)[4] from 7 to 8 years (Cincinnati),[3] 7.3 years—with one half of initial infections occurring between the ages from 6 to 9 years (New York),[10] 7 years (New Haven),[19] 10.2 years (England),[18] 7 years (England),[20] 6.8 years (Philadelphia);[8] at the Irvington House (New York)[17] the mean age is 8 years, while more were infected at age 7 than at any other single age. Fifty-three per cent of our children who died had their first rheumatic attack at 7 years or earlier and 28 per cent had their first attack from 8 to 13 years of age, while the records do not give the information for the remaining 19 per cent for reasons cited in table 9.

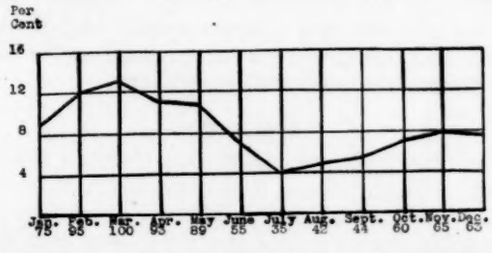
The greatest mortality occurred between three to five years after the primary manifestation of rheumatic fever. Nineteen per cent of the 144 children lived less than three years and 48 per cent less than six years.

TABLE 10.—*Experience in Pregnancy of Girls Discharged from the Children's Heart Hospital*

Number of Pregnancies	Total Married Girls	Total Pregnancies	Course of Pregnancy: No Complications	Miscarriage	Therapeutic Abortion	Rheumatic Activity: During Pregnancy	Rheumatic Activity: After Delivery	Signs of Decompensation: During Pregnancy	Signs of Decompensation: After Delivery	Other Complications
Total girls	40	47	32	4	1	4	1	2	1	2
Married, never pregnant	13	..	..	..	..	..	..	..	..	..
One pregnancy *	14	13	9†	1	..	1	1	1	..	1
Two pregnancies ‡	7	14	8	2	..	2	..	..	1	1
Three pregnancies	5	15	11§	1	1#	1	..	1	..	..
Four pregnancies	1	4	4	..	..	..	..	..	..	..

* Three patients included who have not yet been delivered.
† Two cases of twins included.
‡ Includes three cesarean deliveries and two sterilization operations.
§ Includes one patient pregnant now for the third time.
# Also sterilized.

When the thirty cases are eliminated in which the duration of the disease is unknown, the percentage of patients living less than six years becomes 61. Eight children lived longer than twelve years, the oldest surviving twenty-one years after her initial attack at 7 years. There is no apparent indication in table 9 that the children in whom rheumatic fever occurred early in childhood have a shorter span of life than those in whom the onset of the disease came later. If the patients are divided into two subgroups, one with onset ages of 3 through 7 years and the other with onset ages of 8 through 12 years, those in the latter subgroup have the higher percentage mortality during the first six years of the disease. Wilson and her associates[10] likewise found no apparent relationship between mortality and the duration of the disease. However, at the Children's Hospital in Philadelphia[8] "there was a distinct drop in the death rate among the older children who were first taken ill between 9 and 11 years of age." Halsey,[17] studying 203 children under insti-



Seasonal prevalence of primary manifestations and reactivations of rheumatic fever. Three hundred and seventy-seven (46 per cent) of 816 primary infections and reactivations occurred between February and May.

19. Paul, J. R.: Age Susceptibility to Familial Infection in Rheumatic Fever, J. Clin. Investigation **10**: 53-60 (April) 1931.
20. Poynton, F. J.: Observations on the Nature and Symptoms of Cardiac Infection in Childhood, Brit. M. J. **1**: 249 (March 2) 1918.

tutional care, for whom an estimation of the duration after the onset of the disease to death could be determined found that approximately 16.2 per cent died in the fourth year of the disease; 25 per cent of deaths occurred within the first six years, and in two thirds the duration was less than eight years. Only one fifth of his patients survived ten years or more. Ash [8] reports that, of ninety-three deceased children with clinic care, one third of the deaths occurred within the first year, 51 per cent within two years and 74 per cent within five years of the onset.

SEASONAL INCIDENCE

The dates of onset of 816 attacks of rheumatic fever, chorea and acute carditis were learned, and the accompanying chart shows that the largest number of attacks occurred in March, with a high incidence as well in February, April and May. Forty-six per cent of the 816 attacks occurred in these four months. The lowest number of attacks was in July, August and September.

It is of interest to know the seasonal incidence for one's locality and compare it with other reports. Coombs [18] found a maximum incidence in England during the months of December and January. In a report from two hospitals in London and one in Glasgow,[21] the highest incidence is in the three months November, December and January, with the lowest incidence in the summer months. Sutton [9] reports that the peak in New York is reached in April, with the low incidence during October.

PREGNANCY

An attempt has been made to determine the effect of marriage and childbirth on the girls in this series (table 10). Of all those living whom we have been able to follow up, thirty-eight of the girls are married and two have had illegitimate children (one at 15 and one at 17 years). Thirteen of these forty girls have never been pregnant, but among the remaining twenty-seven there is a record of forty-seven pregnancies. None of those who are known to have died were married. Only one girl suffered definite congestive failure at delivery, and she has been sterilized. Two others showed slight symptoms of congestive failure during pregnancy but went through delivery successfully. "Other complications" include one case of hypertension with threatened abortion and one of severe hemorrhage at the time of the first menstrual period after delivery.

SUMMARY

1. Six hundred and eighty-five children threatened with or suffering from rheumatic heart disease who have been treated at the Children's Heart Hospital of Philadelphia, between 1922 and 1937, have been studied.

2. It is believed that available educational facilities, attention to hygiene, adequate medical supervision and ability to adjust the child physically and emotionally to his handicaps are factors to justify such convalescent institutional care, and further that opportunities for research and training are made available.

3. An apparent resistance among Negroes to rheumatic fever was noted but otherwise the evidence regarding the relationship of race to rheumatic fever did not appear to be significant.

4. Among twenty-seven girls who became pregnant, only one suffered definite congestive failure at delivery.

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21. Child Life Investigations: Social Conditions and Acute Rheumatism, Medical Research Council, London, 1927.

STOMACH LAVAGE IN THE DIAGNOSIS AND CONTROL OF TREATMENT OF TUBERCULOSIS

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Meunier [1] in 1898 was the first to employ gastric lavage as a means of establishing the diagnosis of tuberculosis in infants and children. Although both his idea and his results were good, his work was almost forgotten until 1927, when Armand-Delille [2] and Vibert revived it. Since then Poulsen, Jensen and Husted [3] and again Poulsen,[4] Wallgren,[5] Boer,[6] Kereszturi and her co-workers,[7] Sayé and his co-workers,[8] Collis,[9] Gourley [10] and many others have used the method with very favorable results.

At first this method was used only on infants and children, as originally described by Meunier.[1] Clausen [11] has the distinction of being the first to report results on adults. As time went on the value of the method became more evident, and its usefulness has been established for diagnosis and for control of treatment not only of children but also of adults. Among others, Ulmar and Ornstein,[12] Gad,[13] Levin,[14] Bobrov,[15] Stiehm,[16] Boide and Simonin [17] and Gullbring and Levin [18] have reported work on adults.

At the Chicago Municipal Tuberculosis Sanitarium we have been doing stomach lavages on our adult patients whose sputum was negative for tubercle bacilli since February 1934. A preliminary report of this

From the Research Laboratories of the City of Chicago Municipal Tuberculosis Sanitarium.

1. Meunier, H.: Bacilloscopie des crachats extraits de l'estomac pour le diagnostic de la tuberculose pulmonaire de l'enfant, Presse méd. **2**: 81, 1898.

2. Armand-Delille, P. F.: Bacteriologic Diagnosis by Examination of the Stomach Contents, Am. J. Dis. Child. **34**: 547 (Oct.) 1927.

3. Poulsen, Valdemar; Jensen, K. A., and Husted, E.: The Demonstration of Tubercle Bacilli in Small Children with Pulmonary Tuberculosis, Am. J. Dis. Child. **37**: 900 (May) 1929.

4. Poulsen, Valdemar: Demonstrations of Tubercle Bacilli in Gastric Lavage, Am. J. Dis. Child. **41**: 783 (April) 1931.

5. Wallgren, Arvid: Tubercle Bacilli in Childhood Erythema Nodosum Demonstrated by Gastric Lavage, Am. J. Dis. Child. **41**: 816 (April) 1931.

6. Boer, H. D.: Tuberculosis in Children Due to Infection with Bovine Bacilli, Maandschr. v. kindergeneesk. **2**: 337 (April) 1933.

7. Kereszturi, Camille; Mishulow, Lucy; Schick, Béla, and Behner, Dorothy: Tubercle Bacilli in the Stomach Contents of Children with Positive Tuberculin Tests, J. A. M. A. **98**: 1879 (May 28) 1932.

8. Sayé, L.; Shelton, R., and Doménech Alsina, J.: Sur le diagnostic bactériologique de la tuberculose infantile par l'inoculation du contenu gastrique au cobaye, Bull. Acad. de méd., Paris **109**: 837 (June 20) 1933.

9. Collis, W. R. F., and Brockington, C. F.: Tuberculosis in Childhood: Its Etiology and Prognosis as Shown by Stomach Lavage Method of Obtaining Tubercle Bacilli, Lancet **1**: 127 (Jan. 21) 1933.

10. Gourley, Ina: Tubercle Bacilli in the Gastric Contents of Tuberculous Children, Am. Rev. Tuberc. **29**: 461 (April) 1934.

11. Clausen, Vilhelm: Ueber die Bedeutung der Magenspülwasseruntersuchung für die Diagnostik der Lungentuberkulose, Acta tuberc. Scandinav. **5**: 379, 1931.

12. Ulmar, David, and Ornstein, G. G.: Gastric Examination in Pulmonary Tuberculosis with Negative Sputum: Diagnostic Importance, J. A. M. A. **101**: 835 (Sept. 9) 1933.

13. Gad, Ulf: Diagnostic Value of Gastric Lavage in Adult Patients Without Roentgenographic Foci in Lungs, Acta tuberc. Scandinav. **11**: 189, 1937.

14. Levin, Nils: On Demonstration of Tubercle Bacilli by Means of Lavage of Stomach in Different Forms of Tuberculosis in Children, Acta pediat. **17**: 160, 1935 (Supp. 1).

15. Bobrov, N. N.: Diagnostic Value of Armand-Delille Method (Demonstration of Tubercle Bacilli in Stomach Washings), Probl. tuberk., 1936, p. 718.

16. Stiehm, R. H.: Tubercle Bacilli in the Gastric Contents: An Important Diagnostic and Prognostic Finding, Am. J. M. Sc. **194**: 340 (Sept.) 1937.

17. Boide and Simonin: L'examen bactériologique du liquide de lavage gastrique dans le diagnostic de la tuberculose pulmonaire, Soc. de méd. mil. franç., Bul. mens. **31**: 331-335 (June) 1937.

18. Gullbring, Alf, and Levin, Nils: Importance of Gastric Lavage for Demonstration of Tubercle Bacilli in Adults (with Pulmonary Tuberculosis), Acta med. Scandinav. **93**: 168, 1937.

work was made in 1935 [19] and 1937.[20] At present we present a series of 1,000 patients of whom 970 (97 per cent) were over 10 years of age. This is shown in table 1 and in the chart. This group of patients with negative sputum represents about 11 per cent of the total admissions to the Municipal Sanitarium from February 1934 to October 1938.

PROCEDURE

The patients arise in the morning but are not allowed any food or liquids. Before aspiration they are given 4 ounces (120 cc.) of sterile distilled water to drink. Immediately after the patients have swallowed the water a regular Ewald tube is passed and the contents of the stomach are aspirated, the whole procedure taking from fifteen to twenty seconds.

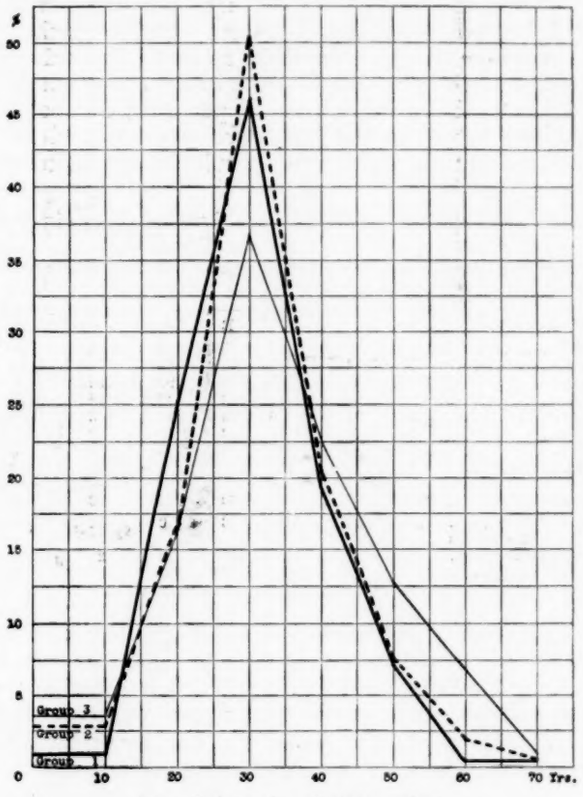
At first we used ordinary tap water, but this was criticized on the grounds that acid-fast bacilli may be found in tap water. Although we have never found a false positive result, nevertheless we now use boiled distilled water. Another factor that was thought might cause a false positive result was that the Ewald tubes and bulbs might not have been cleaned properly. We checked this by washing all the cleaned tubes and bulbs with sterile distilled water and treating the sediment as is usually done in a routine way. The results of this procedure showed an absence of any acid-fast bacilli on culture or on guinea pig inoculation. The method of sterilization of the bulbs and tubes is as follows: They are washed with hot water and then with tincture of green soap. Then they are immersed in 20 per cent saponated solution of cresol for forty-five minutes, after which the bulbs and tubes are washed again with hot water and dried. The basins are treated in the same way. We conclude, therefore, that after the tubes and bulbs are properly washed and sterilized they are free from any tubercle bacilli.

One of us (S. J. C.) has developed a special technic for passing the Ewald tube. The method is as follows: Insert a cold wet Ewald tube about 1½ inches (4 cm.) into the center of the patient's mouth. At the same time the patient is told to bite the tube lightly with his teeth and to breathe deeply through the mouth. The patient's head is flexed sharply so that his chin rests on his chest. The operator's left hand is placed around the posterior part of the patient's neck, applying a downward pressure. The position of the arm serves two purposes; first, it keeps the patient's head flexed on the chest; second, it acts as a vise and keeps the patient under control. The patient is told to release his bite on the tube, and as he does so the operator gradually and steadily passes the tube down with his right hand. The bulb is connected, and when fluid appears in the glass section of the tube it is immediately withdrawn. The whole procedure should not take more than fifteen to twenty seconds. By this method, 2 ounces (60 cc.) of the 4 ounces ingested can be aspirated.

The aspirated contents are placed in sterile bottles, sent to the bacteriologic laboratory and worked up as soon as possible. Here the contents are centrifuged in 100 cc. tubes for forty-five minutes at a speed of 2,500 revolutions a minute. In most cases the sediment was rather scant and all, or the greater part of it, was used for animal inoculation. When there was enough sediment, part of it was treated with acid or alkali and cultured on cream and Lowenstein-Jensen medium.

19. Stadnichenko, A. M. S., and Cohen, S. J.: Read before the Mississippi Valley Medical Society in 1935.
20. Stadnichenko, A. M. S., and Cohen, S. J.: Gastric Lavage as a Means of Demonstrating Tubercle Bacilli in Pulmonary Tuberculosis, Nat. Tuberc. A. Tr. **33**: 125, 1937.

Since this work was more or less experimental and since there was doubt whether the acid-fast bacilli were tubercle bacilli, animal inoculations were made in all the thousand cases, regardless of the results with the smears. In the beginning of our work we used treated specimens for animal inoculation, but we observed in a few instances that while specimens showed typical acid-fast bacilli on the smears they failed to produce tuberculosis in animals. Repeated inoculations, however, with untreated specimens from the same patient gave positive results. This led us to the belief that some of the bacilli might be killed by treatment; therefore almost all the animals in this series were inoculated with untreated specimens. The mortality due to secondary infections among the guinea pigs inoculated with untreated specimens was less than 1 per cent, and most



Ages of the series of 1,000 patients.

of the deaths occurred in the summer, when the mortality in guinea pigs is always higher.

Several investigators have questioned the use of untreated sediment of stomach lavage. They state that most of their guinea pigs die of secondary infections. In checking our procedure we find that we inoculated the guinea pigs as soon as possible, usually within two hours after the stomach was aspirated. This short interval does not allow enough time for the growth of other types of bacteria. If more time is required, it is recommended that the specimen be kept in the ice box until it can be worked up.

Another important factor in preventing secondary infections and spontaneous tuberculosis in guinea pigs is to begin with healthy stock and to give good care after the animal is inoculated. This requires a skilled caretaker and a hygienic breeding house and animal hospital.

The guinea pigs were usually killed at the end of two months. Very few of these animals, even with extensive tuberculosis, died before this time. Smears

and cultures were made from the inguinal lymph nodes or spleen, or from both. The diagnosis of tuberculosis was never made on gross pathologic study alone—the acid-fast bacilli were always found on the smears before the animal was pronounced positive for the organisms.

This series of 1,000 cases might be divided into two main groups (excluding positive controls): a group in which tubercle bacilli were never found by routine examination and the stomach lavages were done to help establish the diagnosis, and a group used to guide therapy and to study its effect.

Most of the patients in this series (excluding controls with negative results) had rather scanty sputum, and that perhaps is one of the main reasons why it was difficult to find the sputum positive by direct or concentration examinations.

Poulsen and Anderson [21] have shown that the percentage of positive results increases with the number of the repeated lavages. In their series of 199 tuberculous children (from 6 to 10 years of age) they obtained positive results with 152, or 77 per cent, on the first washing; but when the procedure was repeated three times the number of positive results increased to 193

TABLE 1.—*The Whole Series of One Thousand Cases Arranged According to Age in Decades*

Age, Yr.	Group 1 A	Group 1 B	Group 2 A	Group 2 B	Group 3	Positive Control	Negative Control
0-10	4	0	2	5	9	2	8
10-12	53	10	20	22	43	12	33
20-30	101	14	45	83	97	35	65
30-40	39	8	21	30	59	8	29
40-50	14	4	4	15	33	3	30
50 60	1	0	2	3	18	0	8
60-70	1	0	0	1	2	0	3
70-80	0	0	0	0	1	0	0
Total number	213	36	94	159	262	60	176
Positive smears	66	18	41	0	0	36	0
No. of cases with collapse therapy	59	12	53	110	79	21	0
No. of deaths	12	8	6	4	3	8	17

(96 per cent), and after five washings they obtained 100 per cent positive results. Similar observations were made by Gullbring and Levin [18] on their series of 348 adult patients, although the exact figures were not given.

The majority of the patients in our series had only one stomach lavage. Of 1,000 subjects 120 had two lavages and twenty had three. Of these 140 subjects, eight yielded positive results on the second lavage but not on the first, and two on the third and not on the first two. This increases the positive results by 7.3 per cent on repetition. In all our cases, however, from a few to many months had elapsed between the repeated lavages, so there is the possibility of a change in the condition of these particular patients.

We have divided the 1,000 patients into three main groups, with two subgroups and also positive and negative controls. The composite data of all patients are shown in tables 2 and 3.

GROUP 1

Group 1 comprised 249 patients. They had evidences of tuberculosis by x-ray or clinical study or by both. The results of sputum examination were always negative, but the results of stomach lavage were positive. Of these 249 patients, thirty-six became positive for bacilli on sputum examination later, necessitating the division of the group into two subgroups, A and B.

Group 1 A was composed of 213 patients who were always negative for bacilli on routine sputum examination and remained negative but who by stomach lavage were found positive. Of these 213 subjects sixty-six (31 per cent) were found positive by smears; 211 were positive on guinea pig inoculations, while two were positive by stomach lavage culture but not by the guinea pig inoculation. These two cultures when inoculated into the guinea pigs proved to be virulent. Of the 211 patients who produced tuberculosis in guinea pigs, there was one with far advanced type B involvement whose direct smear of the stomach washing showed at least 10 acid-fast bacilli per field, yet the guinea pig showed only enlargement of the inguinal lymph nodes. The repeated stomach lavage in this case produced the same result, and even when a pure culture of the bacilli was injected into a guinea pig the only pathologic change observed was the enlargement of the inguinal lymph node. This was the only bacillary strain of low virulence encountered in the series.

There were three patients in this group who were absolutely insensitive to the Mantoux test. One patient had miliary tuberculosis, dying two days after leaving the Municipal Sanitarium. The condition of two other patients was diagnosed as far advanced tuberculosis. One was absolutely insensitive to the Mantoux test at the time the stomach washing was found positive, but the patient later had a strongly positive Mantoux reaction. The third patient was found positive for bacilli three different times on stomach lavage. The patient is having pneumothorax therapy, is feeling well, but is still absolutely insensitive to the Mantoux test. This involvement might belong to the Besnier-Boeck-Schaumann type. Only fifty-nine patients of this group were receiving collapse therapy.

There were twelve deaths (5.6 per cent) in this group, with three postmortem examinations.

As already mentioned, sixty-six patients in this group had positive smears yet their sputums were never found positive. Some of the smears of the stomach washings were very strongly positive, and it is rather difficult to explain why a patient having over eighty negative sputums should have 25 bacilli per field on stomach lavage. In some cases this may be explained on the basis of bronchial peristalsis which caused the bronchial secretions to go into the stomach without coughing, as suggested by Ulmar and Ornstein.[12] Most of these patients, when questioned, state that they either have no cough or raise practically nothing. The majority of sputum specimens in group 1 are nothing more than saliva. It is known that the introduction of pneumothorax therapy usually stops the cough and diminishes the expectoration. It is for these two groups of patients, therefore —those who do not cough and those receiving pneumothorax therapy—that stomach lavage is of greatest value, first in the diagnosis and second in the prognosis of the disease.

There were thirty-six patients in group 1 B. Their sputum was negative at the time when the results of stomach lavage were positive. Later on, however, the patients also were found positive for bacilli on routine sputum examination. The time that elapsed between obtaining the positive stomach washing and observing positive sputum varied from a few months to four and a half years in one case. The particular condition was of the minimal A type at the time the stomach washing was found positive. Now it is diagnosed as moderately advanced B with a positive sputum.

21. Poulsen, Valdemar, and Anderson, A. O.: Demonstration of Tubercle Bacilli and Significance in Prognosis, Therapy and Estimation of Danger of Infection, Am. J. Dis. Child. 47: 307 (Feb.) 1934.

In this group, eighteen patients (50 per cent) were found positive on smear, and all thirty-six were positive on guinea pig inoculation. Twelve of them were receiving treatment other than routine. The mortality in this group was very high; there were eight (22 per cent) deaths with two postmortem examinations. Their pulmonary infections were of recent origin, as shown first by the negative sputums which finally became positive as the disease progressed, and second by the low age incidence associated with the high mortality. This group of patients, in spite of sanatorium care and collapse therapy, have the poorest prognosis. They no doubt include those with rapidly progressive involvement who, according to Bräuning's [22] observations, comprise 20.9 per cent of all patients in the beginning of the disease. They represent the "sunrise" of the disease.

GROUP 2

In group 2 there were 253 patients. They not only had clinical and x-ray evidence of tuberculosis, but all of them, with the exception of twenty, once had positive sputum. These twenty patients were previously found positive on stomach lavage, but they were never found positive on routine sputum examination. At the time the last stomach lavages were done on this group their sputum had been negative for at least nine months on routine examination. Of these 253 patients, ninety-four were found positive on stomach lavage, while 159 were negative even by this examination. We divided this group into subgroups A and B.

In group 2 A there were ninety-four patients whose sputum had once been positive but had been negative for at least nine months on routine examination before stomach washings were found positive. Of the ninety-four patients, forty-one (43 per cent) were found positive by smear, and all ninety-four were positive by guinea pig inoculation. Of these patients, fifty-three were having other treatment than routine. There were six deaths (6.5 per cent) with one postmortem examination.

This group showed that certain patients having collapse therapy have open lesions for long intervals even though the results of routine sputum examination are negative. Many may have had small lesions on the contralateral side, only partial collapse, ulcerative tuberculous tracheobronchitis, bronchial catarrh or some other cause of the positive results. All of these features afford an excellent opportunity for a clinical-pathologic investigation as to the causes.

Group 2 B is composed of 159 patients of whom 139 had positive sputum and twenty had been found positive before by stomach lavage only. All 159 patients were negative on the last stomach lavage. Of this group, 110 received some form of collapse therapy. Only three patients of twenty who were found positive by stomach lavage and not by routine sputum examination received treatment at the time of the positive washing; but, when results of stomach lavage became negative, all but three were receiving collapse therapy. There were four deaths (2.5 per cent) in this group but no postmortem examination. These patients illustrate the value of collapse therapy in pulmonary tuberculosis in producing an absence of tubercle bacilli not only in the sputum but also in the stomach washings.

Groups 2 A and 2 B are being followed further to test the effect of therapy.

TABLE 2.—*Results Obtained for 824 Patients with Pulmonary Tuberculosis*

	Group 1 Patients with Negative Sputum				Group 2 Patients Who Were Positive but Whose Sputums Were Negative for the Previous Nine Months or More				Group 3			
	A Stomach Washing Positive		B Stomach Washing Positive and Later Sputum Positive		A Stomach Washing Positive		B Stomach Washing Negative		Patients Who Always Had Negative Sputums; Stomach Washing Also Negative		Positive Control Patients Who Had One or Two Positive Sputums; Stomach Washing Positive	
Type of Lesion	Collapse Therapy	No Collapse Therapy	Collapse Therapy	No Collapse Therapy	Collapse Therapy	No Collapse Therapy	Collapse Therapy	No Collapse Therapy	Collapse Therapy	No Collapse Therapy	Collapse Therapy	No Collapse Therapy
Minimal A	1	9	..	..	..	2	4	11	5	39	..	1
Minimal B	5	31	2	1	2	3	10	6	19	29	..	3
Moderate A	2	1	..	..	1	2	4	4	2	16	..	..
Moderate B	13	45	2	2	10	6	24	4	18	41	7	6
Far advanced A	1	3	1	2	2	..	10	5	11	16	..	1
Far advanced B	37	60	7	19	38	27	58	17	24	20	14	25
Primary	..	3	..	..	..	1	..	2	..	18	..	1
Miliary	..	2	..	..	..	..	..	..	..	1	..	2
Silicotuberculosis	..	..	..	..	..	..	..	..	..	3	..	..
Total	59	154	12	24	53	41	110	49	79	183	21	39
	213		36		94		159		262		60	

GROUP 3

Group 3 is made up of 262 patients whose condition was diagnosed as pulmonary tuberculosis by clinical or x-ray examination, or both; yet their sputum has always been negative and also their stomach washings. It is to be regretted that only forty-two of this group had repeated lavages. As Poulsen [4] and others have pointed out, repeated lavages increase the percentages markedly. Had we repeated the stomach lavages on all 262 patients we might have found some of them positive. Yet this is not the principal cause of the negative results. One reason is that seventy-nine patients received collapse therapy; another reason is that there was a high percentage of minimal and moderately advanced lesions. In these cases of minimal tuberculosis the diagnosis was made either from a history of two or three symptoms such as fever, cough, hemorrhage, loss of weight or pleurisy or from some small shadows on the x-ray plate.

Perhaps the most interesting cause for the negative results in this particular group is that it contained a high percentage of patients in whom the disease had apparently run its course and had become spontaneously arrested or healed, otherwise known as the "good chronics." That is, there was a predominance of patients

22. Bräuning, Hermann: Der Beginn der Lungentuberkulose beim Erwachsenen, Leipzig, Georg Thieme, 1938.

belonging to clinical class A. This is indicated by the marked shift from the young adult to the patient of middle or old age in this group, as revealed in the chart.

In twenty-eight cases the diagnosis was pleurisy with effusion; in ten of them pleural fluid was found positive, in four it was negative and in fourteen it was not examined. The fourteen patients entered the Municipal Sanitarium after practically all their pleural fluid had been absorbed.

There were three deaths (1.1 per cent) in this group, but no postmortem examinations. One death occurred in the group of patients who had pleurisy with effusion; one patient had silicotuberculosis, and the third had far advanced fibroid involvement.

POSITIVE CONTROLS

A statement has been made that patients with frankly positive sputum are usually negative by stomach lavage, but we were not able to confirm it. We tried stomach lavage on from thirty to forty positive patients, and every one was positive by this test. These frankly positive patients, however, are not included in this group. Our positive control group consisted of sixty patients, fifty of whom were found positive by sputum only once, with from one to ten organisms per slide; the other ten patients were found positive twice. Of these sixty subjects thirty-six (60 per cent) were found positive by smear, while all sixty were positive by animal inoculation.

TABLE 3.—*Negative Controls*

Diagnosis	Number of Cases	Diagnosis Confirmed by Autopsy	Diagnosis Confirmed by Biopsy
"Apparently normal"	52	..	..
Only healed calcified lesion	37	..	..
Bronchiectasis	25	4	..
Lung cancer	16	9	4
Lung abscess	11	1	..
Syphilis	7	..	..
Gland tuberculosis	5	..	..
Bronchial asthma	4	..	..
Hodgkin's disease	3	2	1
Cardiac condition	3	1	..
Nontuberculous empyema	3	..	..
Tuberculosis of the spine	2	..	..
Nontuberculous pleurisy with effusion	2	..	..
Bronchitis, chronic sinusitis, pneumoconiosis, idiopathic spontaneous pneumothorax, tuberculous peritonitis and carcinoma of the breast	6 (1 of each)	..	1
Totals	176	17	6

It is interesting to note that in a number of cases the sputum showed only one organism per slide but the smears from the stomach washings showed more than ten per field. Stomach lavages were usually done shortly after the sputums were found positive.

Only twenty-one patients in this group received treatment other than routine. There were eight deaths (13.3 per cent) with seven postmortem examinations.

NEGATIVE CONTROLS

In this group there were 176 patients. They were under observation. The sputums were always negative and the stomach washings were also negative. Of the 176 subjects, fifty-two had a normal x-ray appearance and no clinical evidences of tuberculosis or any other disease at the time of examination, while thirty-seven had calcified tubercles. These were discharged as not having any active tuberculosis. The condition of twenty-five was diagnosed as bronchiectasis, with four postmortem examinations; sixteen had lung cancers (with nine autopsies and four biopsies, which confirmed the diagnoses for thirteen); eleven had lung abscess with one postmortem examination; seven had syphilis; five had gland tuberculosis; four had bronchial asthma; three had Hodgkin's disease (the diagnosis was confirmed by two autopsies and one biopsy); three had cardiac disorders; three had nontuberculous empyema; two had tuberculosis of the spine; two had nontuberculous pleurisy with effusion, and one each had bronchitis, chronic sinusitis, pneumoconiosis, idiopathic spontaneous pneumothorax, tuberculous peritonitis and carcinoma of the breast. There were seventeen in this group who died (10.4 per cent), and postmortem examinations were made on all of them. The autopsies confirmed the absence of pulmonary tuberculosis. There were eighteen patients absolutely insensitive to the Mantoux test, five reacted to the 1 to 10 dilution, and six reacted to the 1 to 100 dilution.

COMMENT

The value of stomach lavage for adults as well as for children has greatly exceeded our expectations. Perhaps the most gratifying result is the discovery that acid-fast bacilli in the stomach content are virulent and not indifferent saprophytes. Another equally important observation is that in nontuberculous conditions acid-fast bacilli are found rarely, if at all. These two facts taken together at once rule out saprophytic acid-fast bacilli and possible accidental tubercle bacilli that may be found in the mouth and stomach.

In order to support this view we aspirated the stomachs of six healthy scrub women in the Municipal Sanitarium who we thought had been markedly exposed to the tubercle bacillus. All these women showed an absence of tubercle bacilli in the stomach contents. In other words, the first observation establishes the fact that positive stomach washings indicate an endogenous origin of tubercle bacilli in the stomach region or above it. The second fact establishes proof that there is no open focus discharging tubercle bacilli and that the particular patient either is not tuberculous or has a lesion which is enclosed, arrested, or closed by treatment. All of this information is of tremendous importance in the diagnosis and differential diagnosis of tuberculosis and in the control of treatment. Stomach lavage may be called the "court of last appeal" in finding tubercle bacilli in the respiratory and upper gastrointestinal systems. This applies equally well to adults and to children. It emphasizes also the fact, pointed out by Ulmar and Ornstein,[12] that sometimes tubercle bacilli pass out of the bronchi by peristaltic waves into the esophagus without cough and without contaminating the saliva sufficiently to cause a positive reaction. Finally, it is the best method to obtain certified specimens of sputum in suspected fraud.

The first two groups represent the net profit of the method. In all, 249 patients were found positive on stomach lavage when up to that time no other test had established the diagnosis. Of this number thirty-six later became positive according to other tests, but that was perhaps due to a further evolution of the disease after the time of the analysis. Most involvements were recent or in the sunrise stage of the disease. Of 940 patients negative on direct examination, 249 (26.5 per cent) were never found positive by any other method than stomach lavage. Taking out the positive and negative controls and the subjects who were once positive leaves a total of 511 patients on

whom to base percentage figures. This gives an efficiency value of 48.7 per cent for the type of material presented in this report.

In group 2 there were 253 patients once positive but negative for nine months or more on the routine sputum examination at the time stomach lavages were done. Out of these 253 subjects ninety-four (group 2 A) were found still positive by the lavage method, while 159 (group 2 B) remained negative even by lavage. In group 2 A fifty-three patients were under collapse therapy, and in group 2 B 110 were receiving this treatment.

In group 3 there were 262 patients negative on all examinations. The analysis of this group is very interesting. There were seventy-nine who received pneumothorax, which could very well account for the persistently negative observations. There were sixty-eight with minimal involvement in which the disease presumably did not advance far enough to discharge bacilli in the main bronchi. Twenty-eight had a diagnosis of pleurisy, ten of whom were positive, but the sputums were always negative. One had cold miliary tuberculosis, three had silicotuberculosis, and seven apparently had a healing type of adult primary lesion. The remaining seventy-six patients had lesions which had healed partly or entirely so that only stringy apical fibrosis or an old closed fibroid process with emphysema remained. They were in the "sundown" stage of the disease. Many such patients pass over into the negative group with bronchiectatic abscess or emphysema, some of which fail even on postmortem examination to show the tuberculous origin. Of this group fifty-four were over 30, thirty-five over 40 and eighteen over 50 years of age. Many no doubt had had the disease for decades.

In the group of negative controls there were 176 subjects. There were twenty-five cases of bronchiectasis, in most of which the disease may have been of nonspecific origin, but in some it may have been old "sterilized" tuberculosis. There were sixteen cases of lung cancer, in most of which autopsy or biopsies were performed. The eleven lung abscesses were more likely nonspecific. In the fifty-two "normal" cases there were some ephemeral processes causing the patient to be sent to the Municipal Sanitarium, but nothing could be found on clinical, x-ray or laboratory examination. In thirty-seven cases rather large calcified primary lesions were the only evidence of disease at the time of the examination made after entry to the institution. The remainder of the cases are well shown in table 3.

SUMMARY

1. A study was made of 1,000 consecutive patients who were given stomach lavage in the Municipal Tuberculosis Sanitarium, 970 of whom were over 10 years of age. Of this group, 940 were negative for tubercle bacilli by the routine concentration method, fifty were positive only once, with from one to ten bacilli per slide, and ten were positive only twice at the time stomach lavages were done.

2. The sixty patients just mentioned were found positive by stomach lavage and were used as positive controls. There was no point, however, in reporting cases strongly positive.

3. There were 176 negative controls whose clinical and x-ray aspect pointed definitely to a normal status at the time of examination or to diseases other than lung tuberculosis. All were negative on stomach lavage.

4. There were 253 patients who had been positive but were negative for nine months or longer, by routine examination, before the stomach lavage was performed. Of these, ninety-four were positive by stomach lavage and 159 remained negative.

5. Of the remaining 511 patients always negative by routine methods, 249 (48.7 per cent) were positive by the stomach lavage method alone.

6. Of the remaining 262 patients always negative, seventy had early minimal or moderately advanced involvement; seventy-nine received pneumothorax therapy; twenty-eight had pleural effusions, and seventy had terminal fibroid lesions where infiltrative foci had disappeared and only stringy fibrosis or fibroid cavities remained. This left only twelve patients to be divided up among a number of complications or unusual features.

7. Of 403 with stomach washings positive by guinea pig inoculation, 161 (40 per cent) were positive by smear.

8. Of 824 patients with pulmonary tuberculosis, 334 had some form of collapse therapy, which has been present from two months to several years. Of these 334 patients, seventy-nine (23.7 per cent) were never permitted to become positive and 110 (32.9 per cent) became negative by stomach lavage, while 145 (43.7 per cent) were still positive by stomach wash.

9. In this study of 1,000 cases we did not include any unusual observations or make any comparison between the efficiency of the stomach wash and that of the sputum culture. We have such a comparison under investigation at the present time.

CONCLUSIONS

1. Stomach lavage will find tubercle bacilli that become free in the larger bronchi in a manner not equaled by any other method used at present.

2. The patients having tuberculosis who are not found positive for tubercle bacilli by stomach lavage include those with early minimal or moderately advanced lesions which have remained isolated or have been confined to the pulmonary parenchyma or otherwise have not disseminated bacilli into the larger bronchi; completely encapsulated lesions, and extrapulmonary tuberculosis, none of which discharge bacilli into the bronchi or pharynx.

3. Completely healed tuberculous lesions and nontuberculous diseases are uniformly negative by stomach lavages.

4. As stomach lavage seems to come nearer than any other method to finding all virulent tubercle bacilli, it should be adopted as the ultimate standard for absolute negativity or apparent cure of patients having had or suspected of having tuberculosis. It is also useful in the elimination of frauds.

5. While it is not practical or even necessary for universal use, the efficiency of any method used or recommended for practical use may well be standardized by it.

6. It is an excellent method to control the efficiency of collapse therapy.

7. It should be emphasized again that during collapse therapy the absence of tubercle bacilli in only one stomach washing does not necessarily signify that the disease is arrested. The washings must be repeated at frequent intervals. Especially is this true when the collapsed lung is reexpanding.

8. No patient with clinical signs of tuberculosis who has negative sputum should be considered negative until gastric aspiration has yielded negative results.

DIAGNOSTIC VALUE OF OCCULT HEMATURIA

A STUDY OF 3,000 SPECIMENS OF URINARY SEDIMENT

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This article is based on an investigation concerning the meaning and clinical implications of occult blood in the urine. To this end we examined 3,000 specimens of urine obtained from 681 ambulatory patients. The group, in the main, was made up of patients with cardiac, vascular, circulatory, renal, nutritional and other nonacute types of diseases. It did not include gross hematuria such as occurs in from 40 to 60 per cent of patients whose disorders are finally diagnosed as surgical conditions of the genito-urinary tract.

THE TOLIDINE TEST

A small amount of blood or hemoglobin is best detected by the orthotolidine test, which is sensitive up to 1 part of blood in 24,000 parts of urine. One drop of blood in 1,500 cc., an average daily output, will give a positive reaction. For clinical purposes this chemical method of detecting blood in the urine is more accurate than the usual microscopic search for red blood cells; it yields a greater number of positive results. Its interpretation, however, must be tempered with clinical judgment. While the presence of a positive occult blood reaction indicates bleeding somewhere along the urogenital tract and nothing else, one must interpret its clinical significance in the light of medical experience.

TABLE 1.—*Influence of Sex on Hematuria*

Sex	Number of Patients	Positive Tolidine Reaction, %
Male	321	40
Female	360	60

TABLE 2.—*Hydrogen Ion Concentration and the Tolidine Reaction*

p_H of Urine	Number of Tests	Positive Reaction, %
2	2	50.0
4	60	18.3
6	150	36.7
8	310	42.0
10	25	52.0

The orthotolidine test has been used to detect blood since its introduction by Ruttan and Hardisty in 1912.[1] Stone and Burke[2] in 1934 observed that (1) when red blood cells are present in the urine a positive tolidine reaction will be found, (2) that red blood cells in the urine are not ordinarily detected with the microscope until their number exceeds 5,000 per cubic centimeter of urine, and (3) that persistent observation of more than 1,000 red blood cells per cubic centimeter is of clinical significance and merits further consideration.

It need hardly be emphasized that the detection of even small amounts of blood in the urine is desirable in clinical work at all times.

Our observations cover a period of four and one half years, during which time we have had ample opportunity to note the frequency and intensity of the reaction with various disease states. We found it convenient and sufficiently accurate to classify the reactions as grade 1, 2 and 3. As outlined by Stone and Burke and verified by ourselves, grade 1 (1 plus) corresponds to from 1,300 to 1,500 red blood cells per cubic centimeter of urine, 2 plus corresponds to from 4,000 to 7,000 red blood cells per cubic centimeter, and 3 plus corresponds to from 15,000 to 20,000 red blood cells per cubic centimeter.

In performing the test, 15 cc. of urine is centrifuged at high speed for five minutes. After the supernatant liquid has been decanted and discarded, part of the sediment is used for the usual microscopic examination. To the remainder of the sediment in the centrifuge tube is added 2 drops of 1 per cent solution of orthotolidine in methyl alcohol, followed by 4 drops of acetic acid-hydrogen peroxide mixture (glacial acetic acid 1 part and commercial hydrogen peroxide 2 parts). Positive reactions consist of a greenish blue lasting one minute (1 plus), a deeper blue lasting up to two minutes (2 plus) and a deep blue lasting more than two minutes (3 plus). Strong alkalis, as 10 per cent sodium hydroxide, will give a positive reaction, but the common organic or inorganic urinary constituents do not. Iodides or bromides in the urine will give a falsely positive reaction, consisting of a deep bluish black with precipitation of black granules. Excess ascorbic acid in the urine, as during tests or administration of vitamin C, will inhibit the orthotolidine reaction and prevent its appearance.

INCIDENCE

Of 3,000 specimens taken from a group of 681 general medical patients, we found that 33 per cent showed positive tolidine reactions. At the same time we also found that 67 per cent of these 3,000 specimens showed positive reactions for albumin in the urine. These figures clearly indicate that occult blood in the urine, as revealed by the presence of hemoglobin, is one thing and that serum albumin as it occurs in the urine is another. If this incidence of hemoglobin and albumin seems high, it should be recalled that we are dealing here with patients who have recognized diseases and those in whom circulatory disturbances in the renal glomeruli or mucous membrane of the genito-urinary tract are to be expected.

AGE AND SEX

To gain an insight into the meaning of the presence of occult blood in the urine we segregated a group of 100 younger patients up to the age of 20, consisting of forty-eight males and fifty-two females. In this group of 100 we found that one third gave positive tolidine reactions. We also noted that in this group of young patients showing traces of blood in the urine the sexes were evenly divided, with twenty-seven males to twenty-six females. As will be seen later, occult bleeding is somewhat less common in young than in older patients.

Influence of sex on the presence of occult hematuria (table 1) is as follows: The group of patients with positive tolidine reactions consisted of 40 per cent males and 60 per cent females. The excess of females over males is probably to be accounted for by a greater source of bleeding in the female, the generative tract.

Read before the Allegheny County Medical Society, Pittsburgh, April 18, 1939.

1. Ruttan, R. F., and Hardisty, R. H. M.: Canad. M. A. J. **2**: 995, 1912.
2. Stone, W. J., and Burke, G. T.: Improved Test for Occult Blood, Especially in Urine, J. A. M. A. **102**: 1549 (May 12) 1934.

SEASONAL INFLUENCE

Since these observations covered a period of four and one half years, we were interested in the possibility of seasonal variations, with their contrasting temperatures, the changes in activity of the circulatory system and the various physiologic responses which may come in the course of a year. The accompanying chart shows however that seasonal factors are not constant, although our highest incidence occurred during the height of the summer.

RELATION OF POSITIVE TOLIDINE REACTION TO ALBUMINURIA

The entire group of 681 patients had 3,000 tests for detection of occult blood, averaging more than three tests per patient, although some had many more and the others less. Of these, 24 per cent of the positive reactions were in males and 42 per cent in females. It is noteworthy that of the 3,000 specimens 67 per cent also showed albumin in the urine. This, of course, includes a large proportion of samples showing mild albuminuria which was not an indication of existing nephritis. Further analysis revealed that 63 per cent of the males and 71 per cent of the females in the entire group showed albuminuria.

While this incidence of occult blood and albumin seems high, it must be recalled that we are dealing here with patients seeking medical aid for well defined diseases. That both the incidence of occult blood and the incidence of albumin were higher in the female than in the male is to be explained on the basis of the more extensive areas of mucous membrane in the generative tract of the female.

ABNORMAL DEXTROSE METABOLISM AND OCCULT BLOOD IN THE URINE

The questions arose as to whether occult blood in the urine is more common in patients having hyperglycemia and glycosuria and as to whether the diabetic state per se may cause direct injury to the smaller blood vessels and capillaries with resulting bleeding. In an analysis of the data for 100 diabetic patients during periods of hyperglycemia and glycosuria we found that there actually was a lower incidence of occult blood during these periods. As far as these observations go, we have no evidences indicating that the diabetic state of the patient is accompanied by immediate capillary injury or occult bleeding.

TABLE 3.—*Occult Hematuria in Various Diseases*

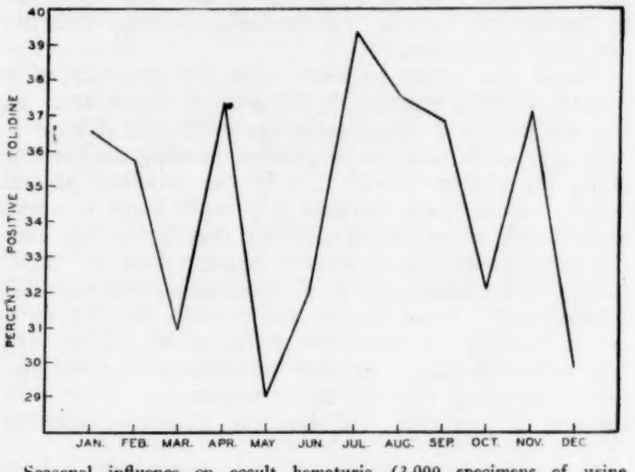
No. of Cases	Disease	Red Blood Cell Average, Million	Hemoglobin Average, %	Tolidine Reaction
6	Severe anemia	3.78	56.0	+++
11	Diabetes and cardiovascular renal disease	4.43	77.4	+++
25	Cardiovascular renal disease	4.53	77.4	+++
9	Chronic nephritis	4.60	76.5	+++
62	Miscellaneous diseases	4.64	79.7	+++
41	Diabetes, uncomplicated	4.83	81.0	+++

ADMINISTRATION OF ARSPHENAMINE AND OCCULT HEMATURIA

Of a group of seventy patients who received intravenous injections of arsphenamine, we note that whereas 30 per cent had positive tolidine reactions before the injections only 20 per cent had positive reactions after the injections. It therefore appears that this arsenical does not have any immediate injurious effects on the renal glomeruli as far as blood or capillary injury is concerned.

HYDROGEN ION CONCENTRATION AND THE TOLIDINE TEST

The tolidine reaction was neither more nor less marked in acid or alkaline urine. Most of the specimens ranged in hydrogen ion concentration between



Seasonal influence on occult hematuria (3,000 specimens of urine, 1934-1938).

6 and 8, which is within the normal range (table 2). Thus it appears that the hydrogen ion concentration of the urine is not a factor and has no influence on the tolidine test.

BLOOD COUNTS AND OCCULT HEMATURIA

The next question that presented itself was whether such occult bleeding in the genito-urinary tract may be one of the underlying causes of secondary anemia, so frequently seen in this type of patient, or whether the fault resides in defective blood regeneration or other causes. We therefore correlated a group of 154 patients whose urinalyses revealed a 3 plus tolidine reaction, which means a continuous loss of from 15,000 to 20,000 red blood cells per cubic centimeter of urine. In this analysis we found first that the red blood cell values are not strikingly lower than for any other mixed group of patients and second that the hemoglobin level was relatively lower than the red cell value, which suggests definite hypochromia.

OCCULT HEMATURIA IN VARIOUS DISEASES

Of the 681 patients, groups with various diseases are classified according to the degree of anemia (table 3). All of these had 3 plus tolidine reactions, which means well marked occult blood in the urine. It will be seen that severe secondary anemia, diabetes with active cardiovascular renal disease, pure cardiovascular renal disease, chronic nephritis and uncomplicated diabetes appear in this table in their positions of relative severity. It is also apparent that the relative positions in this table correspond with our clinical conceptions of the seriousness of these diseases. How much the occult bleeding is responsible for the anemia present in these cases is not an easy matter to decide.

OCCULT HEMATURIA IN SERIOUS DISEASES

The clinical significance of a positive tolidine reaction and its value as an index of serious disease may be inferred from our observations on a group of 662 patients with various diseases. Subdivided into disease

groups, 375 patients showed an incidence of positive tolidine reactions in from 50 to 89 per cent of the cases. Table 4 shows this incidence and the type of disease in which the highest percentage of occult blood was found in the urine. Thus we note that foremost in this list was a group of diabetic patients with recognized cardiovascular disease. After this was chronic nephritis; then came genito-urinary diseases, then cardiovascular renal diseases including cardiac and hypertensive states with or without nephritis. These were followed by pernicious anemia, tuberculosis, asthma, arthritis and other conditions.

All of this tends to show that the presence of a positive tolidine reaction in the urine is significant. In the absence of a diagnosable constitutional disease it may only mean unimportant occult bleeding somewhere along the urinary tract. But in the presence of one of the constitutional diseases it is more likely to serve as an index of the extent to which that disease involves the renal glomeruli or smaller blood vessels or capillaries. In a disease such as diabetes with cardiovascular disease, only 11 per cent of the patients did not show occult bleeding; in chronic nephritis all but 12 per cent had occult bleeding. In pure cardiovascular renal diseases, including essential hypertension and other conditions, 37 per cent had negative reactions, whereas

TABLE 4.—*Various Diseases and the Tolidine Reaction*

Number of Cases	Disease	Positive Tolidine Reaction, %
35	Diabetes and cardiovascular disease	89
16	Chronic nephritis	88
14	Genito-urinary disease	71
104	Cardiovascular renal disease	63
172	Diabetes (uncomplicated)	58
8	Pernicious anemia	50
8	Tuberculosis	50
8	Renal glycosuria	50
6	Asthma	50
4	Arthritis	50

in uncomplicated diabetes 42 per cent had negative reactions. Thus positive occult blood reactions have their well defined clinical meanings, and absence of occult hematuria takes on a prognostic significance in the order of first importance. A negative occult blood reaction gives one assurance of intact vessels in the urogenital tract, which is one of the most important systems in the human organism.

SUMMARY AND CONCLUSIONS

Orthotolidine is a sensitive test for occult hematuria. A positive orthotolidine reaction was found in one third of 681 general medical cases of the so-called chronic diseases. It is less common in youth, with more intact vessels, and it is more common in females than in males on account of the greater source of bleeding in the female generative tract. Seasonal variation pointed to the highest incidence during the summer months. Albuminuria and occult blood are found independently of each other, each having its own significance. Glycosuria is not a cause of occult bleeding. Arsenicals in therapeutic doses do not cause occult bleeding. Alkalinity or acidity of the urine is not a cause of occult bleeding. In patients showing persistent occult hematuria, hypochromic anemia is common. A review of the type of case in which the strongest reactions occurred reveals that these reactions were most pronounced in the clinically recognized serious types of disease and that the test reflects the patient's actual condition.

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FOOD-BORNE INFECTION WITH SALMONELLA AERTRYCKE

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The terms "food poisoning" and "ptomaine poisoning" are frequently used in the diagnosis of an acute illness characterized by vomiting, cramps, diarrhea and elevation of temperature. Both terms are unsatisfactory but, of the two, "ptomaine poisoning" is the more misleading and incorrect, for actual food poisoning rarely if ever occurs. Since vomiting is often the first symptom, it is perhaps natural that suspicion should be directed to the food eaten and vomited.

Investigators in food poisoning have suggested various classifications; none have been found satisfactory unless they are based on etiology. In general, food poisoning is classified in two groups: infection and toxemia. Food infection is the result of contamination of food with various types of living bacteria. Food toxemia is due to the ingestion of food which contains preformed bacterial toxins; botulism is the example in this class.

Rosenau [1] says: "Most instances of food poisoning are from food that is fingered and fussed over, inadequately processed or imperfectly preserved. There is little danger in fresh, clean food, whereas food that is prepared hours before it is eaten gives opportunity for the growth of bacteria. The chief offenders in food infection are meat, milk and mixtures containing these products."

Food infection is an acute disease, usually associated with one of the Salmonella group, although streptococcus and staphylococcus outbreaks have been reported. The symptoms of food infection are those of acute gastrointestinal irritation with nausea, vomiting, diarrhea, prostration, dehydration and a rise of temperature to 102 F. or even higher. The severity of the symptoms varies according to the strain of the organism and the dose. The onset is sudden; usually from six to fifteen hours elapses from the time the food is eaten to the beginning of the first symptoms, although cases have been reported in which the illness began immediately on ingestion of the infected food.

Numerous epidemics of food poisoning have been reported in this country and abroad. Gartner in 1888 did much to clear the mystery concerning food poisoning when he reported a Salmonella enteritidis outbreak in Frankenhausen. Fifty-seven cases occurred with one death, and it was determined that the disease was due to eating meat of a cow which was slaughtered on account of enteritis. The infecting organisms were recovered from the organs of both the cow and the patient who died. Owing to the fact that greater pre-

Dr. Brown was formerly secretary and executive officer, Kansas State Board of Health.

Read before the Conference of Health Officers of the New York Metropolitan Area, Lido Beach, N. Y., July 25, 1939.

1. Rosenau, Milton J.: Preventive Medicine and Hygiene, ed. 6, New York, D. Appleton-Century Company, Inc., 1935.

cautions are now exercised in the processing and preparation of food, these infections occur less frequently than in the past.

Bainbridge reported at least 261 outbreaks in Germany between 1898 and 1908 due to infection with either Salmonella suipestifer or Salmonella enteritidis.

Geiger [2] surveyed 749 outbreaks in this country which occurred from 1910 to 1922 inclusive and involved 5,210 persons with 399 deaths. Forty-four outbreaks were due to botulinus infection with 172 cases and 140 deaths; fifty-four outbreaks, with 2,219 cases and eleven deaths, were due to the eating of food contaminated with organisms of the paratyphoid group. In 404 outbreaks the diagnosis was given as ptomaine poisoning by physicians, and in 147 additional outbreaks this was the diagnosis according to newspapers carrying reports of the occurrences. In 212 outbreaks the assembled data indicated conditions other than food poisoning.

Savage [3] tabulated 112 British outbreaks of bacterial origin from 1878 to 1918, and 121 from 1919 to 1931 inclusive. In the latter series seventy-six, or 63 per cent, were due to infection with Salmonella aertrycke, fourteen, or 12 per cent, to S. enteritidis and seven, or 6 per cent, to S. suipestifer.

Lecoq in Paris published in 1906 a monograph on poisoning caused by whipped cream. He showed that the poisoning properties of mixtures of cream, gelatin and white of eggs had long been known but that the poisonous properties which appeared most frequently in the summer were due not to metallic poisons but to bacterial infection of the egg albumin. The method of infection which he thought most likely was the introduction of infective material into the oviduct of the duck during copulation, with infection of the albumin as it was being deposited around the yolk. Lecoq recited numerous observations of foreign bodies such as straws, seeds and stones found embedded in eggs and obviously introduced in this manner. The greater frequency of infection of duck's eggs was explained by the fact that ducks "practice their amours" in ponds and ditches, where specific contamination of the water may easily be present.

Scott [4] in 1930 reported seven British outbreaks in which duck's eggs were the vehicle of infection. The largest outbreak in this series involved more than 300 persons with one death, the vehicle being ice cream. Although proof was not entirely complete it appeared that a duck's egg infected with Salmonella aertrycke and used in the manufacture of the ice cream was responsible. The ice cream contained an abundance of S. aertrycke, while none of the other ingredients of the mixture except the eggs could be suspected.

Scott also directed attention to another method of infection of the eggs. Eggs of both ducks and hens, if kept dipped in cultures of S. aertrycke, may become infected in a few days. If the culture is simply allowed to dry on, infection fails; part of the shell must remain moistened for penetration to occur.

Authorities are agreed that the diagnosis of food infection depends on the following general principles: (1) history of exposure to the suspected food, (2) symptoms suggestive of food poisoning, (3) isolation of the infecting bacteria from the suspected food and also from the blood, urine, feces or viscera of the patient, (4) specific identification of the causative organism, and (5) demonstration of agglutinins in the blood serum of the patients.

Numerous outbreaks of food infection have been reported in medical literature in this country; reports of S. aertrycke infection are rare. It is desired, therefore, to report an outbreak of fifty-two cases in which S. aertrycke was the active cause and was transmitted by food.

One of us (G. R. C.) for many years had been attending physician to an orphanage for boys and girls of ages ranging from 5 to 17 years. The building occupied by the boys is more than half a mile distant from that occupied by the girls, although the two are operated by the same religious order. The milk supply, produced at the boys' home, is shared with the girls' home. The water supply for each is secured from the municipal system. Sewage disposal at the home for boys is by means of a septic tank, and the effluent drains into a small creek 150 yards distant.

On the morning of May 27, 1936, we were notified by telephone that a large number of the boys were ill. The call was answered promptly and it was discovered that, in addition to development of a sudden illness among the boys, several adult attendants also were ill. The symptoms were those of an acute infection with sudden onset, nausea and vomiting, fever, severe diarrhea (many had bloody stools) and extreme prostration. Temperatures varied from approximately 100 to 106 F. The patient with the latter reading was removed to the hospital, and the illness resulted fatally.

In the first case illness developed at about 1 o'clock on the morning of May 26, and in two other cases the onset occurred between that hour and 5 o'clock. In the great majority of cases onset took place between the latter hour and 6 o'clock of that evening, with an interval of approximately thirteen hours.

We immediately suspected a food-borne epidemic. Illness had not occurred at the girls' home, and therefore water and milk were not involved. The meal which was eaten at 6 o'clock on the evening of May 25 consisted of chopped fried beef, boiled potatoes, mustard greens, bread and butter, milk and rice custard pudding.

A telephone report of the occurrence of the outbreak was made to the state department of health. Representatives of this department arrived five hours later to continue the investigation.

The boys as well as the adult attendants were housed in two brick buildings, both being exceptionally clean. Flush water closets in the two buildings were in satisfactory condition. There were four frost-proof toilets in an outbuilding, approximately 35 yards from the main building. These toilets were in disrepair, although showing evidence of recent use.

The meals were prepared and served in the main building. Screening on the windows and doors of both kitchen and dining room was defective. Flies were found in large numbers in both of these rooms.

Of the various foods which were eaten, rice custard pudding was the most likely vehicle of infection. The rice was boiled during the early morning and allowed to stand on the table for several hours. The custard was prepared during midafternoon, mixed with the rice and then allowed to stand for an unknown length of time before being placed in the refrigerator. In making the custard, among other ingredients, four

2. Geiger, J. C.: Poisoning by Food, Probably Due to Contamination with Certain Bacteria, J. A. M. A. **81**: 1275 (Oct. 13) 1923.
3. Savage, W. G.: Some Problems of Salmonella Food Poisoning, J. Prev. Med. **6**: 425 (Nov.) 1932.
4. Scott, W. M.: Brit. M. J. **2**: 56 (July 12) 1930

duck eggs and two hen eggs were used. Since those who had prepared the custard were also ill, they could not have been the primary source of the infection.

Approximately 1 pint of the rice pudding remained in the refrigerator. On laboratory examination, S. aertrycke was isolated from the pudding and also from the stools of seventeen patients, one of whom died.

The fifty-two patients were distributed by age groups as follows: from 5 to 9 years, fifteen; from 10 to 14 years, twenty-two; from 15 to 19 years, six, and over 21 years, nine. Included in the adult group were two men and seven women, each having a part in the management of the home or of the small farm which supplied potatoes and other vegetables. Seven adults and twelve boys were not ill, having eaten the pudding either not at all or in only a small amount. In some cases this was reported as a "taste" or a spoonful.

All patients were exceedingly toxic, the apparent result of a massive dose of the infection. It was not considered that flies could be responsible because the time elapsing between preparing and eating the pudding was not sufficient to allow for incubation of the organisms. Therefore the investigation was directed to the possibility of infection resulting from the use of duck eggs in preparation of the pudding.

Cultures were made from eighteen freshly laid eggs within twenty-four hours from the time they were laid, without recovering the organism.[5] Cultures were taken from the outside of four eggs, and S. aertrycke was recovered from two.

Certain experimental work was then undertaken. Two eggs were placed in a Petri dish in which filter paper was moistened with sterile water. A third egg was washed and wrapped in filter paper moistened with broth culture of S. aertrycke isolated from the custard, and a fourth egg was inoculated by hypodermic syringe with a similar culture, the hole being sealed with paraffin. One egg, used as a control, was placed in a sterile Petri dish without other attention. All eggs were allowed to stand at room temperature for one week. At the end of this period the eggs were broken and cultures were made from them. The control egg was negative for organisms, but S. aertrycke was recovered from the other eggs. This indicated that under certain conditions the organism would penetrate the shell.

Ducks lay their eggs in a casual manner, dropping them wherever they may be feeding. Duck eggs are usually dirty when gathered, and if they remain on the ground for several days it is possible that the organism will penetrate the shell. If the infection is in the oviduct, the organism may enter the egg during its development.

There were twenty-one ducks on the property; the eggs were used only for cooking. These fowl had the run of the small farm, which was fenced, including the creek. Fecal specimens were secured from all of the ducks. S. enteritidis was isolated from nine specimens, S. aertrycke from six and both organisms from three, while three were reported negative for both organisms. S. aertrycke and S. enteritidis were also isolated from the septic tank effluent where it entered the stream.

Blood specimens were then secured from the nine ducks whose feces had been positive for S. aertrycke. Ordinarily, blood is taken from fowls by inserting a needle into the humeral vein beneath the wing. This method was attempted, but only a few drops could be obtained before the blood coagulated in the needle. The following method was then used: The ducks were held by the wings with the body and feet hanging down. A foot was cleaned with alcohol, one of the large veins in the web was punctured, and the blood was allowed to drip into sterile tubes. By using this method, a sufficient sample was easily obtained from each of the ducks.

The blood of three ducks agglutinated the organism isolated from the custard and from the stools of various patients. These ducks were purchased but did not lay any eggs after they were brought to the laboratory. At the end of fourteen days they were killed, autopsies were performed, and cultures were taken from the oviduct of each. S. aertrycke was recovered from one on direct culture and from the second on enrichment. Cultures from the third duck were negative.

In a further investigation of the possible source of the infection, it was learned that the man in charge of the farm became sick on May 21. His symptoms were similar to those of the others who were ill. Although he had severe diarrhea, he continued his work and defecated frequently on the floor of a shed adjacent to the barn, to which shed the ducks had free access. S. aertrycke was recovered from the stools of this man more than two weeks after the onset of his illness.

This farmer lived in his own home approximately a mile from the orphanage. His wife had not been ill and her stools were negative for S. aertrycke. He did not eat at the orphanage or handle any of the food and denied having used the toilets. The source of his infection was not determined.

Rice custard was the vehicle of infection in this outbreak. Duck eggs which were used in preparation of the pudding were, without doubt, responsible for contamination of the pudding. Infection of the eggs could have occurred during their development in the oviduct, or organisms could have penetrated the shell if a period of several days intervened between the time the eggs were laid and were collected.

SUMMARY

1. An outbreak of Salmonella aertrycke infection occurred in an orphanage for boys.

2. Of the fifty-five boys and sixteen adults living in the orphanage, forty-three boys and nine adults were sick. One death occurred.

3. All persons who were ill had eaten rice custard pudding.

4. Onset of the first case occurred approximately seven hours after ingestion of the suspected food.

5. S. aertrycke was isolated from the pudding and from the stools of seventeen patients, including the one who died.

6. S. aertrycke, either singly or in combination with Salmonella enteritidis, was recovered from the feces of nine ducks. The blood of three ducks agglutinated the organism recovered from the pudding as well as the organism isolated from the stools of various patients. On autopsy, S. aertrycke was recovered from the oviduct of two ducks.

7. The infection was transmitted in rice pudding. The infecting organisms were contained in the duck eggs used in making the pudding, in sufficient quantities to result in massive infection of the custard.

5. The laboratory work was done by Ross L. Laybourn, M.S., bacteriologist in charge, Public Health Laboratory, Kansas State Board of Health, since deceased. References to such work in this paper are taken from his notes.

TEMPORAL ARTERITIS

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AND
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Horton and Magath [1] reported eight cases of temporal arteritis in 1937. Five of these they had studied personally. One of the cases occurred in Uruguay. The same year MacDonald and Moser [2] reported a case and compared the disease with periarteritis nodosa. Jennings [3] reported two cases from England in 1938 and discussed the similarity of temporal arteritis to periarteritis nodosa, thrombo-angiitis obliterans and rheumatic arteritis. Two more cases are described here.

There is a striking similarity clinically and pathologically among all the cases that have been described in detail. The range in age has been between 55 and 80 years, the average being 67. Six of the thirteen patients were between 65 and 70. More women than men have been affected. Weakness and general malaise prior to and during the local involvement of the arteries about the head were common. The prodromal symptoms varied in duration from two weeks to eight months, although it is not clear whether the contiguous signs and symptoms are related to this disease. In some instances the disease dated from an infection of the respiratory tract and was followed by muscle and joint pains. All the patients had headaches. These were often throbbing in nature and associated with tenderness of the scalp and painful mastication. The swelling and redness of the periarterial tissues usually followed the onset of headache. Fever was invariably present during the height of the disease, generally remaining below 103 F. In several instances impairment of vision resulted from damage to the retinal vessels. Muscular weakness was pronounced in our second case. It seems usual for the patient to discover tender swelling over the temporal arteries or behind the ears or to feel pain around an eye. In several instances one side of the face swelled and became tender, followed by a similar series of events on the other side. Tender swellings appeared frequently over the entire scalp. In one case even the buccal cavity became swollen and tender. Jennings described involvement of the arteries in an arm. Horton and Magath reported that the disease lasted from four to six months, but one of our patients was sick for thirteen months. Thus far the disease has always been incapacitating. Despite the advanced age distribution, none of the patients died of the disease.

Investigation of the pathologic changes is limited to the small number of excised portions of temporal arteries. Only ophthalmologic examination has thrown light on the picture of the disease process in the smaller arteries. The portions of temporal arteries removed were relatively firm and rigid. Their lumens were narrow and sometimes completely occluded (fig. 1). The walls were markedly thickened. Microscopically the media and adventitia were profusely invaded by mononuclear inflammatory cells (figs. 2 and 3). In places the musculature was replaced by masses of granulomatous inflammatory tissue. Occasionally hemorrhages appeared in the media. Proliferation of the intima was considerable but not specifically different from that seen in arteriosclerosis, although atheromatous material was not commonly seen. The elastic laminas were usually obliterated. The most characteristic elements of the inflammatory reaction in the arteries were the large giant cells. These were scattered throughout the media in conjunction with the inflamed areas. These cells were quite large and contained many nuclei. Sometimes they were poorly preserved and appeared to be compressed. It has not been possible to demonstrate organisms in the tissues by bacterial stains. No specific cellular aggregations were found constituting tubercles, gummas or Aschoff bodies. The lumens were greatly reduced in width and thrombi occasionally obliterated them entirely.

Fig. 1 (case 1).—Cross section of right middle temporal artery. Reduced from a photomicrograph with a magnification of 65 diameters. (Hematoxylin-eosin stain.)

REPORT OF CASES

CASE 1.—A woman aged 65 had been living in Illinois all her life. At 29 she was jaundiced and had vomiting attacks. At 63 she had influenza. She has been able to distinguish only light and dark with her right eye. In December 1937 she had an attack of influenza which lasted three weeks. This attack was accompanied by fever and a bloody mucopurulent discharge from the nose. Immediately on recovery the patient noted pain and tenderness behind each ear. This persisted for three weeks.

She was well until May 1938, when bronchopneumonia developed, lasting five weeks. During the middle of June the left eye became swollen and painful. This condition subsided in a few days but the right side of the face became swollen, tender and firm. Even the roof of the mouth was involved. A week prior to admission to the hospital the left side of the face and neck became affected similarly. Pain was prominent in the jaws and mouth. Cordlike swellings were felt along the occiput, behind the ears and over the temples.

The patient was acutely ill and undernourished. Subcutaneous swellings were felt in the regions of the occipital, posterior

From the Department of Medicine, University of Chicago.

1. Horton, B. T., and Magath, T. B.: Arteritis of Temporal Vessels: Report of Seven Cases, Proc. Staff Meet., Mayo Clin. **12**: 548 (Sept. 1) 1937.

2. MacDonald, J. A., and Moser, R. H.: Periarteritis and Arteritis of Temporal Vessels: Case Report, Ann. Int. Med. **10**: 1721 (May) 1937.

3. Jennings, G. H.: Arteritis of Temporal Arteries, Lancet **1**: 424 (Feb. 19) 1938.

auricular, parietal and middle temporal arteries. The middle temporal and supra-orbital arteries felt like firm cords except for the pulsation. The retinal veins appeared engorged. A mucoid discharge came from the nose. The teeth were carious and broken. The temporomandibular joints were painful and limited in motion. The submaxillary, anterior and posterior cervical lymph nodes were enlarged and tender. A systolic murmur was heard over the entire precordium. The second pulmonic sound was louder than the second aortic. The radial and brachial arteries were thick. A few small mucosal hemorrhages were seen on the palate.

The patient was hospitalized for seven and one half weeks. The temperature usually had an afternoon peak of 100 F. After a total of 13.2 Gm. of sulfanilamide was administered

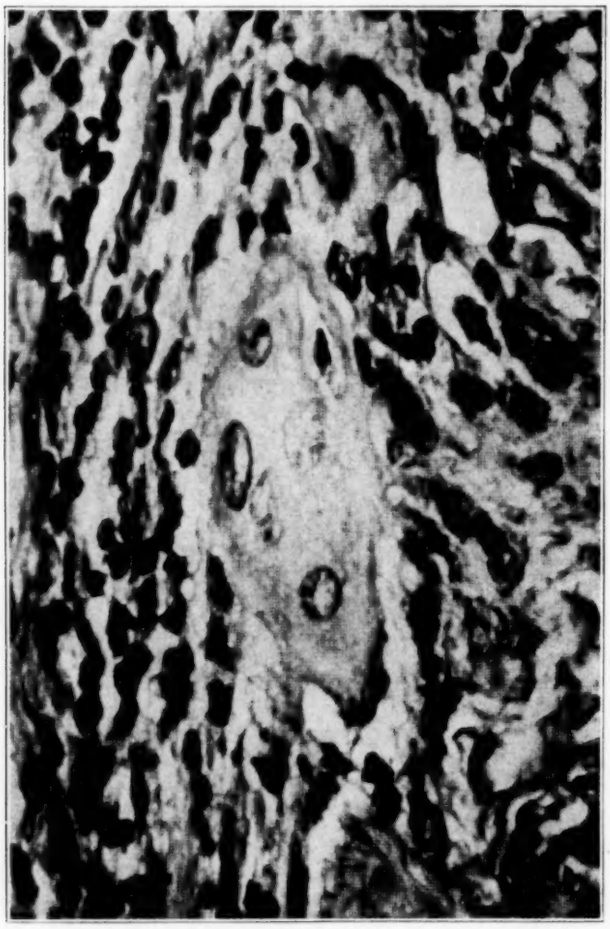

Fig. 2 (case 1).—Inflammatory reaction including giant cell in media. Reduced from a photomicrograph with a magnification of 1,050 diameters. (Hematoxylin-eosin stain.)

over a period of seven days the temperature rose to 100.4 F. and then returned almost to normal the following day. The drug was stopped when a rash appeared. Sulfanilamide was given again for two days with a consequent rise in temperature and a rapid return to normal. While the patient was in bed, vision in the left eye became blurred. The optic disk was twice normal size and was slightly edematous. A small hemorrhage was present on the disk. The visual field was reduced to a small point. A biopsy was made of the right middle temporal artery.

The urine and stools were essentially normal. The leukocyte count ranged between 6,300 and 13,100 cells per cubic millimeter. The differential counts were not unusual. The hemoglobin varied from 70 to 78 per cent. The erythrocyte count ranged between 4,500,000 and 4,900,000 cells per cubic millimeter.

Reactions to the Wassermann and Kahn tests were negative. Hemolytic streptococci were revealed by cultures of material taken from the throat. A blood culture showed no growth. Streptococcus viridans grew in a culture made from the temporal artery.

The patient was feeling well in September.

CASE 2.—A woman aged 76, who had come to Chicago from Sweden fifty years before, had frequent sore throats all her life. In 1918 she had influenza. Four years later the gallbladder was removed. In 1928 she had acute tonsillitis. In 1936 her right knee became swollen and tender.

In November 1937 the patient began to have severe frontal headaches. The aching included the eyes and the face as far down as the lower jaw. These headaches persisted until June 1938. In April 1938 tender swelling of the left temporal artery appeared. Then the right side became involved. Soreness of the eyes and blurred vision followed. There was diplopia for one week. Her muscles were sore and the joints felt stiff. Examination in June revealed large, firm, tortuous pulsating temporal arteries, tenderness of the scalp, tortuous retinal arteries, sluggish extra-ocular movements, poor vision in the right eye, inflamed tonsils, adentia, enlarged cervical lymphnodes and a blood pressure of 172 systolic, 80 diastolic. Between June and October the headaches were absent but the patient did not improve otherwise. In October the temporal arteries looked the same. Examination revealed warm and moist skin, enlarged anterior cervical lymph nodes, small tender swellings over the occiput and small cysts on the surfaces of the tonsils.

The patient was hospitalized for twenty-three days. She had constant night sweats. The muscle soreness and stiffness in the joints improved. The temperature ranged from 99.2 F. to 100.4 F. daily. Sulfanilamide was administered for eight days without effect. There was an occasional trace of albumin and a moderate number of white cells in the urine. The red cell count was 3,350,000 per cubic millimeter and there was 10.3 Gm. of hemoglobin. The blood count became normal with iron therapy. The Wassermann and Kahn reactions were negative. The sedimentation rate and cell volume were normal. The urea clearance was moderately reduced. The blood urea was 18 mg. per hundred cubic centimeters of blood. No free acid was obtained from the stomach after histamine. X-ray examination of the skull was negative. There was marked widening of the innominate artery, according to the film, and the sinuses were clear. An electrocardiogram showed a tendency toward left axis deviation.

It was not until two months later that the vascular signs subsided.

COMMENT

Jennings questioned the specificity of the syndrome and compared it with periarteritis nodosa, rheumatic arteritis and thrombo-angiitis obliterans. Nevertheless he points out more differences than similarities and by description strengthens the view that temporal arteritis is not the same disease as any one of the others. The characteristics they have in common are fever, sweating, loss of weight, anemia, muscle and joint pains, periarteritis, medial inflammatory reactions with hemorrhages, intimal proliferation and thrombosis. The clinical symptoms are those of inflammatory involvement of blood vessels. Pathogenically the changes in common are those expected in chronic inflammation of arteries regardless of etiology. The several clinical entities are obscure etiologically but are considered to be separate diseases according to our present state of knowledge by virtue of clear clinical differences. For similar reasons temporal arteritis should be isolated at present as an individual entity.

The pathologic material obtained is insufficient to give a satisfactory picture of the disease. The important differential element in the inflammatory process is the invariable presence of large giant cells in the walls of the arteries. No aneurysms have been noted on biopsy of the temporal arteries. The giant cells have not been associated with other cellular elements to form

specific tubercles or gummas. Giant cells have not been associated with thrombo-angiitis obliterans, rheumatic arteritis or polyarteritis nodosa.

It has been suggested that the etiology may be related to degenerative vascular changes occurring commonly in persons in this age group. The invariable presence of fever and inflammation and the self-limiting course of the disease point to the process of infection. An infection superimposed on arteriosclerosis may enhance the severity of the disease by permitting the occurrence of thrombosis more readily. Thus far bacteriologic investigation of removed portions of arteries has revealed nothing striking. In two instances Streptococcus viridans was recovered from the arteries.

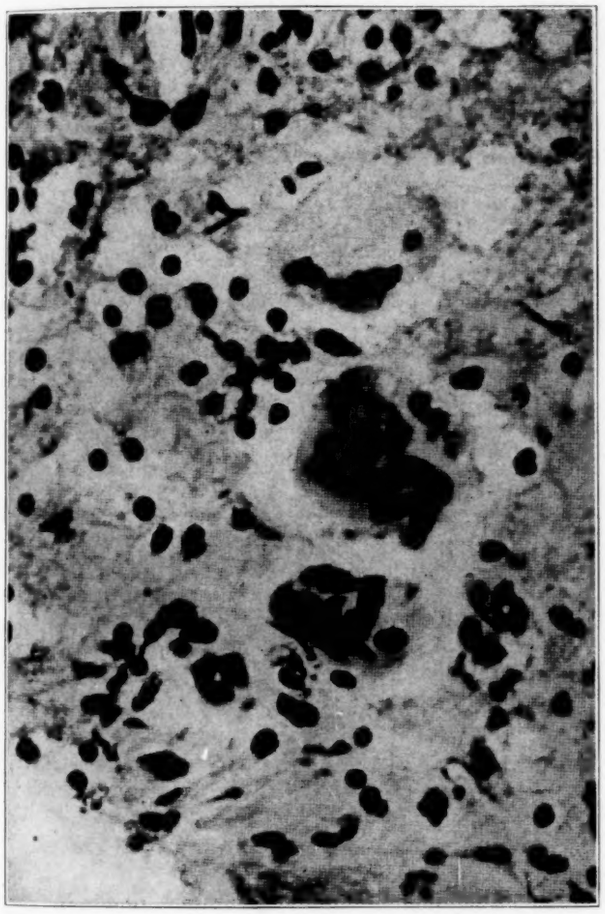

Fig. 3 (case 1).—Inflammatory reaction including giant cells in media. Reduced from a photomicrograph with a magnification of 1,050 diameters. (Hematoxylin-eosin stain.)

Some of the patients had infections of the respiratory tract preceding the vascular disease. The muscle and joint symptoms suggest that the disease may include a much wider distribution of tissues than the blood vessels of the head.

SUMMARY

Two cases of temporal arteritis are added to the eleven previously reported in the literature. The disease is a chronic inflammatory process involving the temporal arteries mainly with extension to other arteries of the scalp and face and sometimes to the retinas and the arms. It is a disease occurring chiefly in old people. It runs a self-limiting course, lasting usually several months. Giant cells are found characteristically as part of the inflammatory process. The etiology is unknown.

"SLOW EPINEPHRINE"

AN EXPERIENCE

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Since the advent of protamine zinc insulin several years ago, efforts have been increased, I believe, toward the preparation of drugs which would be, when injected subcutaneously or intramuscularly, like protamine zinc insulin, piecemeal in action, slow in action, safer in action, and more efficient in action because of these qualities. Thus, no doubt, when Keeney [1] published his preliminary report in 1938 on a "Slowly Absorbed Epinephrine Preparation" interest became more centered on epinephrine than before. Then a year later the same author [2] gave in detail his experiences with epinephrine in oil in twenty-four cases. The epinephrine in oil he used was a suspension of powdered epinephrine base in peanut oil, 1 cc. of the oil containing 2 mg. of epinephrine, or a 1:500 mixture. Ten patients who had had asthma, chronic in its manifestations, received relief from their symptoms of asthma for from eight to sixteen hours, while one patient received no prolonged effect from the doses that were indicated. Eleven others were treated during one or more acute paroxysms of asthma, remaining free from asthma for from nine to sixteen hours; one patient with urticaria and one patient with serum sickness secured evident relief from their symptoms for twelve hours. In comment as to the ill effects experienced from the drug, Keeney states that there may or may not be soreness, induration and swelling, with redness, at the points of injection and that frequent and consecutive injections may be irritating in the same fashion. However, the drug can be injected intramuscularly without producing a local reaction.

In one case, fifteen minutes after the administration of epinephrine in oil there was experienced palpitation and nervousness which endured for forty-five minutes; in another, headache, palpitation and nervousness of such a degree was produced that the drug was used no further; in a third case, within five minutes after the injection of epinephrine in oil, nervousness, palpitation and irregular cardiac action came on and lasted for sixty minutes. Because of the rapidity with which this picture was brought about it was thought that a part of the material, at least a part, had entered some small blood vessels during the injection.

Spain, Strauss and Fuchs [3] have more recently reported on "A Slowly Absorbed Gelatin-Epinephrine Mixture," a 1:500 gelatin-epinephrine mixture used in fifty cases, deducing from the study of these that the 1:500 gelatin-epinephrine mixture was slowly absorbed, was nontoxic, and from its use marked clinical improvement often results; and also that there is a reduction in the number of doses required when the gelatin-epinephrine mixture is substituted for the regular solution of epinephrine. In one case this slow epinephrine produced an unbearable amount of nervousness, insomnia and later headaches, necessitating the discontinuance of the drug.

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The descriptive literature of epinephrine in oil states that this is a suspension of 2 mg. of powdered epinephrine crystals in 1 cc. of peanut oil and that the dose in adults is from 0.75 to 1.5 cc. to be given intramuscularly. Also that patients who are in need of epinephrine because of an acute paroxysm of asthma had best be given the selected dose of the 1 : 1,000 aqueous solution of epinephrine hydrochloride subcutaneously, followed with the indicated intramuscular injection of epinephrine in oil. It cautions against a larger dose than 1.5 cc. for adults and that it should not be given to the aged or to patients who have hypertension and the like.

REPORT OF CASE

Mrs. W. L. C., white, aged 22, a housewife, when seven months pregnant in the early part of 1938 experienced her first attack of asthma, which however lasted only twenty-four hours and responded for from two to three hours at a time to 2 to 3 minims (about 0.15 cc.) of the 1 : 1,000 aqueous solution of epinephrine hydrochloride. Soon after her baby was born at full term (this baby being now alive and well) she had her second attack, which lasted only two or three hours and required just two injections of epinephrine of from 2 to 3 minims each for relief.

June 4, 1939, or thereabouts she had her third attack of asthma, then again June 10 another attack, which lasted all night and was so severe by 11 o'clock the morning of June 11 that she called for help, and then she was given 5 minims (0.3 cc.) of epinephrine and 1 cc. of slow epinephrine in the right deltoid muscle. From this she quickly received relief from her wheezing and the asthmatic breathing but soon became extremely nervous, restless and shaking, with the feeling as if she were going to die. This continued on and increased in severity until I saw her at 11 : 35 a. m. That she was responding quite intensely to epinephrine was most evident for she had a deep pallor, she was restless and there were fibrillary twitchings of the muscles generally, especially of the arms and the upper part of the legs. Her expression was one of great fear. The respiratory rate was 30, the pulse rate irregular, at times not felt, counted around 160, but her heart tones were not booming and were not prominent. In fact, it was difficult beneath the rapid breathing rate to hear the heart tones clearly. In the abdomen, which was quite thin, an abdominal pulse was seen and easily palpated. At the moment it was not quite clear as to why this picture should have resulted from epinephrine unless she had been given a huge dose; she had been given, as stated, 5 minims of epinephrine subcutaneously and 1 cc. of slow epinephrine intramuscularly. The patient was lying in her bed at home, for she had not the strength to sit up or move about, and she had the feeling that if she were to move she would collapse.

Since the picture presented an emergency, I pulled loose one of the rubber tubes of a stethoscope and used it as a tourniquet above the belly of the right deltoid muscle, back of the area in which the epinephrine in oil had been injected, and we held this tourniquet tight. Within a minute or two the patient ceased her restlessness and the twitchings of the muscles were over with; the pulse rate decreased none in count, however, but became more regular and better felt. Likewise, the abdominal pulse was not so apparent. She was relaxed now and smiled. Then when it was felt that the tourniquet had been in place a time, lest it might cause damage to the arm or the fingers, it was released, and within a half minute there returned the restlessness, nervousness, twitchings, the irregularity of pulse and there was a deepening of the pallor and the appearance of anxiety. At the moment when I determined that the patient had had enough of this, I again used the tourniquet and the response was as before: a quieter patient, a better pulse, a lessening of the pallor.

The tourniquet was kept on for a while and off for a while until it seemed advisable to take her to the hospital, for I did not know how long it would take to get rid of the epinephrine in oil, and I knew that at the hospital there were measures that could be used to bring about a quicker recovery from this trying experience. I accompanied the patient, therefore, to the hospital in an ambulance, holding the tourniquet in place and reaching the hospital at 12 : 20 p. m., where it was once again noted on release of the tourniquet at the moment when the fingers were becoming numb, perhaps hurting a little, that within a minute the muscular twitchings, restlessness, nervousness, pallor, anxiety and irregularity of pulse rate had all returned. When the patient had all she could stand of this, the tourniquet was reapplied, securing fairly quickly a calmer individual. At 12 : 27 a capsule of pentobarbital sodium was given and at 12 : 30 an intravenous injection of 5 per cent dextrose in saline solution was begun. At 12 : 50, in the midst of the epinephrine effect, the blood pressure was 110 systolic, 60 diastolic and the pulse rate irregular, from 140 to 150. At 12 : 53, after the tourniquet had been in place about two minutes, the pulse rate was 152 and the heart tones were normal except for the rapid rate. There was cyanosis generally, especially of the lips, fingernails and the palms of the hands. On the right arm where the tourniquet was being applied, and immediately on release of the tourniquet, the blood pressure was 100 systolic, 54 diastolic. Gradually, with the tourniquet being kept on for a while and off for a while, and with the effect of the pentobarbital sodium apparently coming into play, the patient closed her eyes and became somewhat drowsy. The epinephrine reaction became somewhat less severe, so that by 1 : 30 the tourniquet was taken off and left off. By 3 : 25 the pulse rate had dropped down to 120 and the respiratory rate to 20, the pallor had in marked degree disappeared and there were no contractions of the muscles. The patient at this hour was discharged; she walked out.

The next day, June 12, the patient's husband called on the telephone stating that his wife had supper the night before and slept all night, though at 1 o'clock in the morning she took a capsule of pentobarbital sodium. She was able to eat breakfast in the morning.

COMMENT

The question What has happened here? of course arises. The picture is one of responses, severe in manifestations, to epinephrine. Can a small blood vessel in a muscle be broken open by a needle or ruptured by oil dispersion and remain open for two hours so that it can take up the drug that is in its area? I doubt that this is true. Has the epinephrine base separated out of the oil and been pooled and thence absorbed in huger quantities and more quickly, and has water (in a wet syringe) or tissue juices (muscle) had anything to do with such effect? I'd rather think that the patient's tolerance to epinephrine was low. She is a thin, healthy looking person, not very tall, and has no stigmas of thyrotoxicosis.

Every effort has been made to describe this case without exaggeration. Because of the anxieties and fears, because of the unusual responses and the severity of responses, and because the patient was in a home, the case was truly one of emergency.

CONCLUSIONS

1. Slow epinephrine (epinephrine base in peanut oil) has been used in an acute paroxysm of asthma.
2. The severest of responses to overdosage of epinephrine resulted.
3. All cautions should be followed in the use of slow epinephrine.

204 North Third Street.

Still Seeking Truths.—Today, truths are still being sought out on the same lines as those which Harvey gave us. It would be a mistake to think that we have, even yet, reached a point that approaches finality in medicine, in surgery, or, indeed, in any of the sciences.—Robarts, H. H.: If Health be Waiting, *Edinburgh M. J.* **46**:725 (Nov.) 1939.

EPINEPHRINE HYDROCHLORIDE IN ACUTE PUERPERAL INVERSION OF UTERUS

REPORT OF THREE CASES

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Inversion of the uterus has been so well covered in the literature and standard textbooks on obstetrics and gynecology, particularly those by Curtis,[1] Irving,[2] Cooke,[3] Williams,[4] Graves[5] and De Lee,[6] that we shall attempt here only a brief summary of existing thought with special reference to management of acute puerperal cases. More particularly, we shall consider the use of epinephrine hydrochloride as an aid in reduction of the uterus to its normal position and report three additional cases in which this treatment was used.

Epinephrine hydrochloride has been particularly useful in prolonged labor with contraction ring as reported by Weiss,[7] Rudolph and Ivy[8] and others. The experimental and clinical work with the drug and studies on the physiology of uterine contraction by Rucker,[9] Rudolph and Ivy,[10] Rudolph[11] and Ivy, Hartman and Koff[12] are of great interest. De Lee[13] expressed doubt whether this drug will relieve uterine spasm. The consensus indicates that epinephrine hydrochloride relaxes the uterine muscle, usually after one contraction, even in the presence of solution of posterior pituitary or ergotamine tartrate.

Having used this drug successfully many times with contraction rings, at the suggestion of Dr. J. E. Fitzgerald, of our staff, we decided on its use in acute inversion of the uterus as reported by Urner,[14] hoping that the cervix would relax enough to make replacement of the corpus possible. In cases of inversion of the uterus, epinephrine has been used for treatment of the accompanying shock, we feel in insufficient doses to relax the uterus adequately. Its use in the treatment of shock probably precedes attempts to replace the uterus by too long an interval to be efficacious.

Inversion of the uterus is a relatively rare condition in which the uterus is turned inside out. The incidence varies considerably, being approximately one case in from 100,000 to 113,000 pregnancies, according to Findley's[15] and Curtis's[1] reviews of the literature, respectively. Irving[2] reported one case in 7,837 deliveries at Boston Lying-in Hospital and Maxwell[16] one case in 6,500 deliveries at the University of California Hospital. Jacobs[17] reported not a single occurrence in 250,000 cases at the St. Petersburg Lying-in Hospital, while Findley[15] reported only one inversion in 280,000 cases at the Vienna Lying-in Hospital. Davis[18] and others expressed the belief that it is occurring more frequently since the advent of solution of posterior pituitary. Curtis[1] stated that the incidence is roughly one case in 6,000 deliveries and that the regrettable circumstances surrounding some cases may account for their failure to appear in the literature. Kobak,[19] in going over the Chicago Department of Health records, found seven deaths due to inversion of the uterus in 94,000 deliveries over a two year period; in five of the seven cases the condition was diagnosed at autopsy, being unrecognized before death. These, of course, were only autopsy statistics and do not include acute cases with survival, so that the condition is probably much more common than is generally recognized.

Inversion of the uterus may be classified in various ways. It may be puerperal or nonpuerperal, depending on whether it occurs incidentally to delivery or in conjunction with pedunculated submucous tumors. It may be complete or incomplete, depending on whether the fundus has passed through or is within the cervical ring; the complete variety is the most common in the literature, but many writers suggest that this may be true because incomplete inversion goes unrecognized. According to Cooke[3] inversion may be spontaneous or traumatic, depending on etiology. According to Kellogg's[20] classification, it may be acute, subacute or chronic, the acute type having not over forty-eight hours' duration with a relaxed cervical ring, the subacute type having under thirty days' duration but with definite cervical constriction, and the chronic type being present for more than thirty days.

The cause is still unknown, although many theories have been advanced. Cooke[3] stated that the traumatic variety is the most common and blamed traction on the cord with the uterus relaxed and improper attempts at placental expression. This view has also been held by Gordon,[21] Milne,[22] Browne[23] and others. Findley[15] stated that no amount of force applied from above could invert a well contracted uterus and that the cord would rupture before traction from below would invert it. Irving[2] concluded from his review of the literature that probably in most cases inversion is spontaneous. According to Murphy,[24] Dudley[25] and Ashton,[26] the uterine musculature beneath the placenta is relaxed while the placenta is still intact; owing to the weight of the placenta the uterus becomes indented, and therefore with contraction of the surrounding muscle there is an attempt to expel it. Uterine inversion seems to be more commonly reported in primiparas,and in primiparas the placenta is a little more likely to be implanted in the

From the Department of Obstetrics of the Cook County Hospital.

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fundus, according to Beckmann,[27] Vogel,[28] McCullagh [29] and Zangemeister,[30] although it is certainly not due to this fact in all cases because Holmes [31] reported four cases and Thorn [32] two cases in which it was a complication of placenta praevia. Irving [2] stated that the nonpuerperal type such as is produced by submucous fibroids is usually incomplete. Curtis [1] stated the opinion that the relaxed uterine supports usually present in these cases may have something to do with the etiology.

The pathologic condition is simply that the uterus is turned inside out; because of this the bladder, tubes and ovaries and ligaments are drawn down into the crater with marked traction on the ligaments. Some authors, notably Jolly [33] and Curtis,[1] have concluded that this is the cause of the profound shock, which is often out of all proportion to the amount of hemorrhage.

The symptoms and clinical picture are usually those of shock, with hemorrhage, possibly some pain, a tumor mass in the vagina or presenting at the vulva, and absence of the uterus from its usual position. The constricted cervical ring causes congestion with venous bleeding. There should be no trouble in making a diagnosis if the condition is kept in mind, although according to reports in the literature some appalling things have been done.

If there is disagreement in the literature as to the etiology of this condition, there seems to be almost uniform agreement as to the immediate treatment in acute cases. Curtis,[1] Irving,[2] Cooke,[3] Williams [4] and others have all urged that nothing radical be done before the shock is treated and that no attempt to replace the uterus be made until the patient is in better condition, except to place the uterus in the vagina and pack and apply a pad with pressure to help control hemorrhage. McCullagh [29] found that 30 per cent of the patients died when early attempts at replacement were made in the presence of shock and only 5 per cent when the shock was treated first. Irving [2] stated that this is proof enough, and Curtis [1] said that "it is dangerous to proceed when shock is present."

At this point in the treatment the road divides, and there is a diversity of opinion as to the best method of replacing the uterus. Cooke [3] advised attempts at replacement with the patient under morphine or an anesthetic. He warned against use of solution of posterior pituitary, as it may make reduction difficult owing to the hardness of the uterus and after replacement it may initiate reinversion. He stated that if the uterus cannot be replaced it should probably be removed. Curtis [1] said that Huntington, Irving, Kellogg and Masson favor abdominal replacement. In our opinion there is no doubt that operative correction or hysterectomy is the procedure of choice in chronic cases; we feel that our efforts have been so successful that the treatment is certainly worth a trial in acute puerperal inversion.

REPORT OF CASES

CASE 1.—A white secundipara aged 24 entered the Cook County Hospital at 2 a. m. in the service of one of us (A. F. D.) in extreme shock, practically moribund and bleeding vaginally. The nurse's note on admission will give some idea of her desperate condition: "Pulse imperceptible, color blanched, air hunger, skin cold and clammy, pads saturated with blood, packing loose, patient restless but unresponsive, pupils dilated and oval." The resident's note stated that "on admission the patient was gasping, pulseless, ashen gray and cold, blood pressure was impossible to register." The note sent to the hospital with the patient by the physician who attended her during her confinement stated that she had "postnatal hemorrhage with a fibroid tumor of the uterus." The history of the delivery was obtained from the husband. The baby was born at home six hours before the patient's admission to the hospital. After a short wait the physician attempted a manual removal of the placenta. The afterbirth was attached to a tumor, from which it was peeled; the tumor was replaced. The patient continued to bleed; a prescription for fluidextract of ergot was left and the physician departed. Because the bleeding continued after several doses of the medicine, the physician was called back; he sent the patient to the hospital after packing the vagina.

On admission to the hospital, intravenous administration of 1,000 cc. of 2.5 per cent dextrose and 0.4 per cent saline solution was started immediately; because of the extremely precarious condition of the patient 500 cc. of group IV citrated blood was given intravenously from the blood bank with 500 cc. of 0.9 per cent saline solution, without cross matching. Shock therapy was instituted with administration of heat, 10 minims (0.6 cc.) of a 1:1,000 solution of epinephrine hydrochloride, 7½ grains (0.5 Gm.) of caffeine with sodium benzoate and another 1,000 cc. of 5 per cent dextrose given intravenously.

After two hours the patient began to rally, and the resident examined her because of marked bleeding through the pack. The pack was removed and the uterus found to be inverted and about 1 cm. within the introitus. There was considerable bleeding from many vessels over the entire surface of the uterus. The cervix was firm and tightly drawn over the inverted uterus. A gentle attempt at reduction failed, and it was thought inadvisable to do more until the patient was in better condition. The vagina was packed tightly; one-fourth grain (0.015 Gm.) of morphine sulfate was given and this medication repeated one and one-half hours later for restlessness. A second and a third intravenous injection of 500 cc. of citrated blood, each diluted with 500 cc. of 0.9 per cent saline solution, were given after cross matching was done, and another dose of 7½ grains of caffeine with sodium benzoate. At this time the pulse rate was 76 and the temperature 96.4 F.

About eight hours after admission to the hospital and about fourteen hours after delivery, after three transfusions and administration of 3,500 cc. of fluid, the patient was in fairly good condition. Ether anesthesia was started and the patient was prepared for vaginal examination. Fifteen minims (1 cc.) of a 1:1,000 solution of epinephrine hydrochloride was given; the fundus relaxed but the cervix remained tight, so the same amount of epinephrine was given in eight minutes. At this point relaxation of the cervix occurred with softening of the uterus. Reduction of the inverted uterus was easily accomplished. With the hand in the uterus, the operator (A. F. D.) could feel attempts of the organ to reinvert, so one ampule of ergonovine malate was given and another in seven minutes, after which an intra-uterine pack was placed. In about one hour and forty-five minutes the patient was awake and talking to her sister, in good condition and with a pulse rate of 108. The next morning the temperature had risen to 100.4 F. and the pulse rate to 92. After an ampule of solution of posterior pituitary had been given, the pack was slowly withdrawn and the posterior pituitary medication repeated. Administration of ergonovine malate 1/320 grain (0.0002 Gm.) three times a day and of sulfanilamide 15 grains four times daily was started because of the temperature. The red blood cell count after the third transfusion was 3,240,000 and the white cell count 27,700. After a fourth transfusion, the red cell count was 3,750,000. Because of moderate cyanosis, the sulfanilamide was discontinued. The temperature went as high as 102 F. and a foul lochia was present, but the patient was able to be discharged from the hospital on the fifteenth postpartum day.

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33. Jolly, Weber: Inversio Uteri, Ztschr. f. Geburtsh. u. Gynäk. **76**: 280, 1914.

About two weeks later she again was admitted because of vaginal bleeding and an upper respiratory infection. The temperature remained normal except for one reading of 99.4 F. Pelvic examination at this time showed that the cervix was soft and admitted one finger; the fundus was enlarged and seemed to have a greater transverse than longitudinal diameter.

CASE 2.—A private patient was seen in consultation by Dr. James Bloomfield,[34] one of the attending physicians at County Hospital. She was in shock, four hours after the inversion occurred and after the placenta had been peeled off. She was receiving intravenously physiologic solution of sodium chloride and a transfusion had just been started. Fifteen minims of a 1:1,000 solution of epinephrine hydrochloride was given, and this was repeated in fifteen minutes. Without any anesthetic and in the presence of shock the uterus and cervix relaxed and the fundus was easily replaced and packed. The patient was given tablets of ergonovine malate, 1/320 grain three times a day for three days. After twenty-four hours part of the pack was removed, and in thirty-six hours the remainder was removed. Ten minutes after the uterus was replaced the patient, who had been in profound shock (the physician who called Dr. Bloomfield told him he didn't think she would be alive by the time he could get there), was sitting up talking to her friends. From his experience Dr. Bloomfield thinks that this method should be tried immediately, even in the presence of shock; if not successful, the shock should be treated and some operative procedure performed.

CASE 3.—A white secundipara aged 24, admitted to Cook County Hospital in the service of Dr. Alfred Kobak, had been sent to the antepartum clinic of the hospital by her private doctor because of high blood pressure and albumin in the urine, but she had had no toxic symptoms. Although, according to the menstrual date, delivery was due two days after she was seen in the clinic, the examining physician there thought she was only seven months pregnant. A rectal examination disclosed the head at the spines; after this the patient passed about an ounce of bright red blood without pain. She was sent into the hospital, where a sterile vaginal examination was made. No placenta was felt and the membranes were intact.

Two days later she went into labor and after five hours delivered her baby spontaneously. Ten minutes later the uterus had risen high up in the abdomen, the lower uterine segment was soft and the fundus was firm. The patient was instructed to bear down with pressure applied to the abdomen with the flat of the hand. The cord advanced and finally the placenta appeared at the vulva. Moderate pressure was exerted over the fundus and the placenta was expelled, but the membranes were adherent. The basin containing the placenta was gently moved up and down and the placenta-like tissue advanced. Because the placenta seemed large, an inversion was suspected and the resident was called. He confirmed the diagnosis. There was an accompanying hemorrhage of between 800 and 1,000 cc. The placenta had almost completely separated from the fundus at this time and the patient had gone into shock. No active bleeding followed the inversion. Shock therapy was instituted. External heat and 7½ grains of caffeine with sodium benzoate were administered, and 1,000 cc. of physiologic solution of sodium chloride and 300 cc. of acacia solution (30 Gm. of acacia in 100 cc. of distilled water diluted with physiologic solution of sodium chloride to 300 cc.) were given intravenously until blood could be obtained. In the presence of shock, 10 minims of a 1:1,000 solution of epinephrine hydrochloride was given and the uterus was easily replaced after removal of the placenta. One ampule of solution of posterior pituitary and one ampule of ergonovine malate were given, and because the uterus contracted well only a vaginal pack was placed. A tear extending to the rectal mucosa was sutured. The first transfusion started caused a slight reaction and so was discontinued, but the patient was later given 1,000 cc. of citrated blood from the blood bank diluted with 1,000 cc. of physiologic solution of sodium chloride intravenously, and one fourth grain of morphine sulfate and 1/320 grain of ergonovine malate every four hours for six doses. The patient's admission temperature was 99 F., pulse rate 96 and blood pressure 148 systolic, 94 diastolic. Seven hours post partum the temperature was 101.6 F. and the pulse rate 152, but from that time the temperature rapidly fell to normal, although the pulse rate remained between 84 and 100. The patient was discharged on the eighth postpartum day in good condition. She had no foul lochia. The placenta was attached in the fundus.

34. Bloomfield, James: Personal communication to the authors.

COMMENT

After reviewing these three cases, we were all impressed by the ease with which reduction of the uterus was accomplished after the use of adequate doses of epinephrine hydrochloride, and we feel that 15 minim doses should be used and repeated if necessary.

In spite of the fact that these patients usually come out of shock soon after replacement of the uterus, one must still face the fact presented in the literature that six times as many die when treated during the shock. We are in complete accord with Dr. Bloomfield that if inversion should occur to one of our patients in labor we would immediately try replacement with the use of epinephrine hydrochloride; but we feel that, as most of these patients are brought into the hospital in shock, the shock probably should be treated first.

We feel that inversions of the uterus are real emergencies and that the help of every one in the service who can be spared is essential to good treatment. First morphine sulfate in one fourth or one half grain doses should be given, and then because a patient in shock is likely to have collapsed veins the intravenous fluids should be started, followed by transfusion as soon as suitable blood can be obtained. Next the patient should be kept warm and given stimulants, and the foot of the bed should be raised. The uterus should be placed in the vagina and the vagina packed to prevent hemorrhage as far as possible. The placenta should not be removed until replacement is attempted because this increases the blood loss. Enough blood and intravenous fluid, either physiologic solution of sodium chloride or 5 per cent dextrose, should be given to build up the patient's blood pressure. After the patient's condition is considered suitable, she should be prepared and draped on the table. The first 15 minim dose of a 1:1,000 solution of epinephrine hydrochloride should be given, then the placenta should be peeled off and, if the uterus and cervix relax, replacement attempted. If the uterus and cervix do not relax, the same amount of epinephrine should be given; we feel that, if this is done, attempts at replacement will usually meet with success.

We realize that it is very hazardous to transfuse without cross matching, but it was deemed necessary in the first case by those who were present.

Inversion of the uterus, particularly the acute puerperal type, is a formidable complication of labor. It may be spontaneous or may be induced by improper management of the third stage of labor. Because traction on the cord and improper attempts at expulsion of the placenta are common and the condition relatively uncommon, one wonders if this procedure is as important an etiologic factor as the literature would lead one to believe. The ease with which the fundus slipped through the cervix, particularly in the first case handled by one of us (A. F. D.), makes us wonder if this may not point to the cause, namely an unusually relaxed cervix and fundus. Inversion produces bleeding and profound shock usually out of proportion to the bleeding. If shock is present, the consensus is that it should be treated before attempts at replacement of the uterus are made. In the three cases presented epinephrine hydrochloride in adequate doses seemed to facilitate easy replacement of the uterus.

CONCLUSIONS

1. Acute inversion of the uterus is a rather rare but serious complication of labor.

2. If inversion occurs, it can probably be corrected immediately, before shock occurs, by adequate doses of epinephrine hydrochloride.

3. If shock is present, the shock should be treated before replacement is attempted.

4. Replacement is facilitated by adequate doses of epinephrine hydrochloride, namely 15 minims, repeated if necessary.

Clinical Notes, Suggestions and New Instruments

DEATH FROM AIR EMBOLISM FOLLOWING PERIRENAL INSUFFLATION

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The incidence of air embolism is not high, but it is a potential danger whenever air is injected into any organ or tissue of the body. The increasing popularity of perirenal insufflation as an aid in the diagnosis of tumors of the retroperitoneum makes pertinent a note of warning concerning the method.

The literature abounds with clinical reports of death from gas embolism following the introduction of air or oxygen into the urethra, bladder, uterus, pleura, peritoneum or blood stream. It would be paradoxical to assume that the retroperitoneal space is endowed with an invulnerability which these other structures do not enjoy. I cite a case from my own experience to attest the fact that this region is subject to the same hazard.

A white woman aged 38 entered the hospital complaining of a swelling in her right flank of four months' duration. On physical examination a smooth, extremely hard mass was palpated in the right upper quadrant of the abdomen. It moved with respiration and seemed to occupy the region of the right kidney, which could not be felt apart from it.

A bilateral pyelo-ureterogram (fig. 1) showed a normal left upper urinary tract. The right kidney was displaced downward and medially, the upper portion of the ureter coursing in front of the fourth and fifth lumbar vertebrae.

On the basis of the abdominal examination and pyelographic studies a clinical diagnosis of retroperitoneal tumor was considered likely. In order to be more certain of the location of the mass, however, it was decided to perform a perirenal insufflation. This procedure was carried out in the manner described by Cahill.[1] A blunt spinal puncture needle was introduced below the midpoint of the rather long twelfth rib and advanced until the usual "jump" was felt as the end pierced the transversalis fascia. Following removal of the stylet no blood escaped from the needle and none could be aspirated when a syringe was attached. With the aid of a two way valve, 200 cc. of filtered air was slowly injected. Although no manometric check was made on the pressure, no excessive force was exerted.

The patient remained perfectly rational during the injection, but two or three minutes later her body suddenly became rigid and extended in the opisthotonos position. There was an immediate loss of consciousness and control of the sphincters. Her color became cyanotic, the vessels of her neck were dilated and the respirations were labored and irregular. The pulse was thready and the heart sounds were barely audible. No bruit suggestive of air in the chambers of the heart was heard. The blood pressure reading could not be obtained. The eyes were deviated to the right; the pupils were small and contracted and did not react to light. The tendon reflexes were normal.

One hour later the patient regained consciousness. She complained of complete blindness and tingling all over her body. The tendon reflexes were still normal and no sensory changes could be made out. Her vision gradually returned in the course of a few hours.

From the Department of Surgery, Division of Urology, University of California Medical School.

1. Cahill, G. F.: Air Injections to Demonstrate Adrenals by X-Ray, J. Urol. **34**: 238 (Sept.) 1935.

Six hours after the injection, roentgenograms of the chest and abdomen were taken. The film of the abdomen showed a poor localization of the air, although its presence within the perirenal space was clearly demonstrated (fig. 2). No evidence of the injected air was seen in the film of the chest; there was no pneumothorax and no air in the mediastinum or beneath either cupola of the diaphragm.

For twelve hours after the injection the condition of the patient seemed to improve, but thereafter she became irrational and increasingly restless, despite large doses of opiates. She died twenty-one hours after the perirenal insufflation. The pulse rate had risen to 180 and the temperature reached 102.4 F. just before death.

A necropsy was performed by Dr. Nathan Rudo. Abstracts from the report of the examination follow:

No hemorrhage was found along the path of the injection. There was no gross evidence of injury to any blood vessel, the liver or the right kidney; the kidney was displaced downward and medially by a tremendous enlargement of the liver. No sign of the injected air was found at any point.

The heart, lungs and brain were grossly normal. At the junction of the cecum and ascending colon there was an ulcerated tumor which almost completely encircled the lumen. The liver was riddled with huge masses of tumor tissue, many of which had undergone central cystic degeneration.

Microscopic sections of the brain, lungs and kidneys showed antemortem clots obstructing many of the smaller arteries, veins and capillaries (fig. 3*A*). In some areas perivascular hemorrhage was also seen (fig. 3*B*). The primary tumor, as well as the metastatic implants, was typical of adenocarcinoma of the cecum.

Fig. 1.—Bilateral pyelo-ureterogram showing the right kidney displaced downward and medially. An apparent filling defect is seen to resolve in the oblique lateral view (inset). The deformity suggested by the anteroposterior view is produced by horizontal renal torsion, the kidney being rotated on its transverse axis with the upper pole in a dorsal position.

COMMENT

The patient's clinical course assured the diagnosis of air embolism. The cerebral manifestations localized the lesions to the brain and precluded a purely circulatory failure or air emboli of the coronary vessels.

It is interesting to speculate on the route taken by the air in entering the blood stream. The roentgenographic evidence demonstrated that the air originally entered the perirenal space and that it did not penetrate the pleural cavity, the peritoneal

cavity or the mediastinum. From the perirenal space it may have found its way into one of the friable veins which are so numerous in the fatty tissue surrounding the kidney; it may have dissected along the vascular pedicle or renal pelvis to gain entrance into a branch emptying into the renal vein close to its origin or to invade the vascular parenchyma through the sinus renalis. The possibility must be considered also that, in

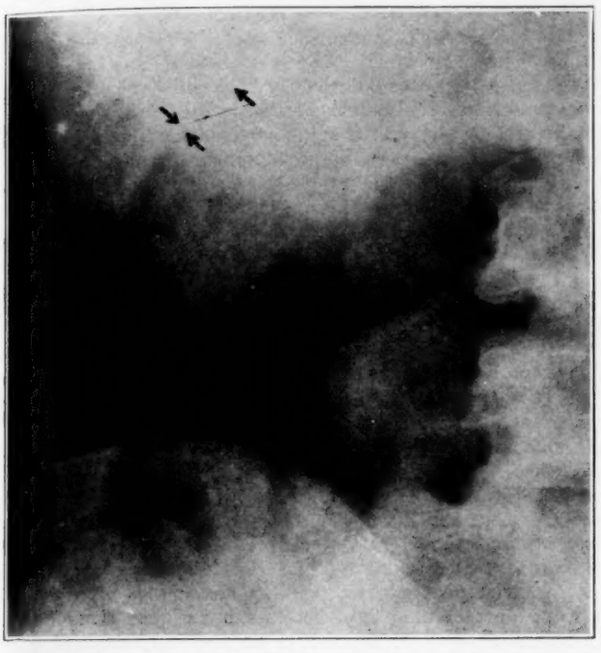

Fig. 2.—Area of the right kidney six hours after perirenal insufflation. Although the air is still poorly localized, its position within the perirenal space is clearly demonstrated by a dark crescentic shadow which outlines the lateral and inferior borders of the displaced right kidney, as indicated by the arrows.

addition to a primary invasion, the air may have entered the venous system by way of the cisterna chyli and thoracic duct.

Regardless of the route taken, it is evident that the communication must have been extremely small or some gross hemorrhage would have been apparent. In this connection the recent experimental studies of Villaret[2] and his co-workers are illuminating because they indicate that the size of an embolus is of far less importance in causing death than is generally believed.

As Mathé[3] has emphasized, air is more likely to enter the circulation in the presence of any injury or disease of the adjacent blood vessels. It only increases the risk of an already dangerous procedure, therefore, to drive the point of the needle into the cortex of the kidney as a step in injecting the perirenal space, as recommended by Gianturco and Drenckhahn,[4] or to have the patient perform rowing exercises after the injection in order to work the air around the kidney, as advised by Mencher.[5]

If it were possible to introduce air into the body at a pressure lower than that in the veins which lie in the vicinity, the procedure should be harmless enough. Unfortunately the normal venous pressure is little higher than the atmospheric pressure (15 mm. of mercury in the venules, falling to 5 mm. in the larger veins, according to Eyster[6]), and, as the vena cava is reached, the venous pressure becomes negative in respect to the atmospheric pressure, although it is positive as compared to the intrathoracic pressure. Since air occasionally penetrates the mediastinum during injection, this relationship bears directly on the problem of perirenal insufflation. Gianturco and Drenckhahn[4] recommended injection at a pressure not exceeding 3 cm. of mercury, yet this is 15 mm. greater than the pressure in the venules and 25 mm. higher than that in the larger veins. In spite of the fact that the lowest pressure at which air can be injected into the perirenal space does not completely eliminate the danger of air embolism, it is nevertheless a matter of considerable importance to make the injection under as low a pressure as possible.

There is no agreement as to the mechanism of death from air embolism. In cases of massive embolism it is generally conceded that mechanical obstruction of the circulation or pulmonary suffocation may be regarded as constituting the essential factor. In smaller embolisms the immediate cause of death is not so easily explained. Carr[7] recently brought forward the revolutionary idea that the formation of thrombi rather than the gas alone causes the damage. He observed antemortem intravascular clotting and perivascular hemorrhage (as seen in the case reported) in the organs of experimental animals and human beings following the injection of air intravenously. Death resulted from these changes and not from true air emboli.

CONCLUSION

The danger of death from air embolism renders perirenal insufflation a hazardous procedure. If utilized at all, this diagnostic aid should be reserved for that small group of patients for whom the observations made by its use may prove of extraordinary value. In order to reduce the danger to a minimum, care should be exercised to avoid traumatization of the surface of the kidney and the tissues injected, and the injection should be carried out under as low a pressure as possible. Any damage to a vein, even though the vessel is of small dimensions, is a potential site for the entrance of air.

Should an unidentified mass cause a displacement of the kidney a great deal may be learned concerning its location by pyelography and a proper interpretation of the torsion which is present.[8] As concerns the detection of less pronounced enlargements, such as small tumors of the adrenal gland, perirenal insufflation has in my experience yielded equivocal results.

If, after exhausting the innocuous diagnostic methods at one's disposal, further study of the retroperitoneum is indicated, it seems to me that exploratory operation is more desirable than perirenal insufflation. While perhaps carrying a slightly higher risk, open operation assures an accurate diagnosis and affords

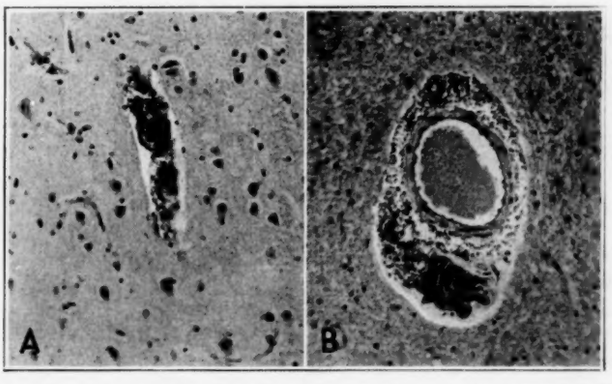

Fig. 3.—Section of the brain following death from air embolism: *A*, antemortem clot occluding a capillary (high power); *B*, area of perivascular hemorrhage surrounding a small artery and vein (low power).

the immediate opportunity for the performance of any curative operation which is found to be indicated. The simultaneous exposure of both adrenal glands, according to Young's[9] technic, adds little to the risk of a unilateral procedure and has much to recommend it when confusion exists as to which gland should be explored.

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BLINDNESS DUE TO AIR EMBOLISM: A COMPLICATION OF EXTRAPLEURAL PNEUMOLYSIS

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Our purpose in this report is to draw attention to the occurrence of an air embolus in the eye and to record two cases in which this was observed as a complication of extrapleural pneumolysis.

REPORT OF CASES

CASE 1.—*History.*—F. C., a Negro woman aged 27, was admitted to the Baltimore City Hospital in August 1936. A diagnosis of pulmonary tuberculosis was made and treatment with pneumothorax was instituted. In February 1937, because of unsatisfactory collapse, this therapy was discontinued. Nov. 11, 1938, a first stage thoracoplasty was performed. The first, second and third ribs on the left side were resected and an extrafascial apicolysis was done. Following this procedure pneumothorax treatment was resumed.

December 15, 120 cc. of air at a pressure of 220 mm. of water was injected. Immediately after this procedure the patient complained of excruciating pain in the head and within a few moments exclaimed that she could not see. She became nauseated and vomited. The pupils were constricted. She feared approaching death. She rapidly became disoriented. A sedative (one-fourth grain [0.016 Gm.] of morphine) served partially to control her restlessness. She passed gradually from a state of confusion into coma, interrupted by generalized convulsions, which occurred many times a day for three days. Improvement then ensued and by the fifth day she was well oriented and was able to feed herself. Results of general and neurologic examinations were negative except for those of the ocular examination.

Examination of the Eyes.—The ocular fundi were not examined during the early hours of this attack. At the onset the pupils were constricted and failed to react to light. Ophthalmoscopic examination was made twelve hours after onset of the illness and was reported as negative. A cycloplegic had been used and this eliminated further observations on the motility of the pupil. There were no apparent extra-ocular palsies at any time. Eighteen hours after the onset there was a low grade retinal edema, most pronounced in the maculae. This edema persisted for one day. The nerve head and vessels appeared normal. The patient did not perceive light. On the fourth day vision was limited to hand motion with either eye, and on the fifth day, after further improvement, the visual acuity was 20/200. Field defects, if present, were not discovered. At examination on the fifth day the only remaining defect was impairment of vision. Visual acuity steadily improved thereafter, so that within nine days after the accident the vision was 20/15 in both eyes and she could read small print with ease.

CASE 2.—*History.*—R. D., a Negro youth aged 20, was seen at the Johns Hopkins Hospital in July 1937, at which time a diagnosis of pulmonary tuberculosis was made. He was admitted to the state sanatorium, where he remained for one year. His condition became progressively worse and in April 1939 he was admitted to the Johns Hopkins Hospital for surgical intervention. April 15 a left-sided extrapleural pneumolysis was done. The following day 500 cc. of air was injected. Two hours later the patient suddenly complained that he could not see, and a complete motor paralysis of all four extremities was found. He rapidly became disoriented and feared approaching death. At the onset the respirations became shallow; the pulse rate increased and he was nauseated and vomited. He was placed in an oxygen tent and given morphine for sedation. Later in the evening occasional spasmodic contractions of the left leg were observed. The paralysis on the right disappeared by the following morning, but for four days clonic contractions persisted in the left leg. On the sixth day the patient was able to move and use the left arm, but the left leg remained paralyzed. He became completely oriented and gradual improvement continued, but on the twelfth postoperative day a bronchocutaneous fistula and signs of sepsis developed. Following this the course was steadily downhill. He died three weeks later. Autopsy was not obtained.

Examination of the Eyes.—Examination was recorded two hours after the onset of the accident. The pupils were dilated and fixed to light. The retinas were extremely pale, but the state of the vessels was not described. Four hours later the pallor of the retinas had disappeared and the vessels were normal. The pupils remained dilated. The patient appeared to be completely blind. The extra-ocular movements were observed to be normal during brief periods when the patient cooperated. This situation persisted for three days, and on the fourth day he was able to perceive light with either eye and there was a return of pupillary constriction on exposure to light. On the fifth day visual acuity was equal to hand motion. Gradual improvement continued thereafter, and within two weeks vision had become 20/20 and Jaeger I in both eyes. The eyes remained normal.

COMMENT

From a review of the literature and on the basis of the two cases herein reported we have attempted to summarize the important facts regarding air embolism as it affects the eyes.

Mechanism.—The mechanism [1] of air embolism is not entirely clear. It would seem that prerequisites for the occurrence of air embolism are (1) open or wounded veins, (2) available air and (3) either pressure on the available air so that it is forced into the veins or a negative pressure within the veins so that the air is pulled into them. If veins are cut across, they cannot readily collapse when they are suspended in fibrous tissue. Pulsating arteries adjacent to these veins may contribute a negative pressure within the veins, so that a wound within the vessel becomes a veritable suction valve. In human beings [2] the amount of air necessary to cause symptoms is not known. Accidental introduction of air into the veins rarely results in untoward symptoms.

Experimental injections of air into the carotid artery of dogs have been reported by Wever [3] as resulting in the immediate pallor of the retinas, engorgement of the veins and generalized convulsions; within five minutes after the injection of air the retinas may again be normal. We have injected air into the carotid artery of an anesthetized dog. Immediately after this injection air appeared in the retinal arteries. With the ophthalmoscope the picture was striking. Glistening rods were seen irregularly placed in the arteries and were most clearly visible at the point of arterial branching. This characteristic picture was transitory and had disappeared within less than one minute. There was some engorgement of the veins and questionable narrowing of the arteries. There was definite pallor of the retinas.

Symptomatology.—The occurrence of symptoms usually follows immediately after the injection of air, but in some instances there may be a lapse of several hours between the injection of air and the onset of symptoms. Case 1 exemplifies immediate occurrence of symptoms, whereas case 2 exemplifies delayed occurrence. Probably the delay in the onset of symptoms in case 2 was due to delay in entrance of air into the vessels.

The symptoms may be described as follows: The patient complains immediately of severe pains in the head, dizziness, nausea and vomiting. In some instances there may be blindness. Fear of impending death is a prominent symptom. The pulse becomes rapid and the breathing shallow and labored. There may be general or localized convulsions. Extensive paralyses may develop. Death may ensue within a few minutes. If, however, death does not occur within the first half hour the prognosis is relatively good. Permanent defects of vision as a result of an air embolus have not been recorded. Hamilton and Rothstein [4] described cases similar to those here reported. Pronounced improvement of paralyses may be con-

Dr. John T. King Jr. and Dr. William Rienhoff Jr. gave us the privilege of reporting these cases.
From the Wilmer Ophthalmological Institute of the Johns Hopkins Hospital and University, and the Baltimore City Hospitals.

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fidently expected even in severe cases.[5] In case 1 herein reported recovery was complete; in case 2 there was pronounced recovery but some degree of paralysis remained.

When the eyes are involved, blindness is an early symptom. Because of their transitory nature definite ocular signs, as observed in animals, are rarely seen in human beings. Retinal edema, such as was observed in case 1, may be of such mild degree that it may easily be overlooked. In severe cases blindness may persist for several days, as in our two cases. The pupils may be either dilated or constricted. Paralyses of the extraocular muscles were not seen in our cases but have been reported; conjugate deviation of the eyes has been recorded.[6] Field defects not apparent in our cases have been reported by others. Barkan[7] has recorded homonymous quadrantic defects and homonymous hemianopia which disappeared within two weeks.

CONCLUSIONS

Two cases of air embolism as a complication of extrapleural pneumolysis were observed. Both patients were blind for a period of three days. Improvement of vision was gradual and within two weeks it had become completely normal.

The appearance of air in the retinal vessels is a pathognomonic sign of air embolism, but this sign is so transitory that it is rarely seen. Blindness is the most important ocular sign. The prognosis for return of vision is good for patients who survive.

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Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE TREATMENT OF DEHYDRATION, ACIDOSIS AND ALKALOSIS

DANIEL C. DARROW, M.D.

NEW HAVEN, CONN.

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Under various circumstances a syndrome called dehydration develops. The patient shows diminished turgor of the skin, sunken eyes, poor circulation, oliguria and concentration of the blood with respect to red cells and serum proteins. While an inadequate intake of water will produce some of these symptoms, the fully developed picture occurs almost exclusively when, as a result of vomiting, diarrhea, sweating or abnormal diuresis, the body has lost extracellular electrolyte (salts) as well as water. Furthermore, this fully developed picture of dehydration can be produced when extracellular electrolyte is no longer available to the body as a whole because it has been fixed in the inflammatory exudate of a burn. In dehydration the evidences of loss of fluid volume are confined chiefly to extracellular fluids. The central feature is the deficiency of extracellular electrolyte, since dehydration can develop either with or without loss of water from the body as a whole.

In order to explain the treatment of dehydration, the factors controlling the distribution of body water will be briefly described.[1] About seven tenths of the body weight is represented by water, which is distributed in two physiologic compartments. The water outside the cells constitutes about 25 per cent of the body weight in adults and about 35 per cent in newborn babies; the water inside the cells makes up about 50 per cent of the body weight. Although cellular membranes separate these two compartments, the water is free to move between the two in response to osmotic forces. Since the effective osmotic pressure of these two compartments is largely due to potassium in the case of intracellular water and to sodium in the case of extracellular water, the distribution of these two univalent bases is the chief factor controlling the distribution of body water.

The characteristic feature of extracellular fluids is that they contain large amounts of bicarbonate, chloride and sodium and but small amounts of magnesium, phosphate and potassium. Blood plasma, lymph, interstitial fluid and cerebrospinal fluid are the chief examples of extracellular fluid. Since these fluids are in free communication with blood plasma through the capillary membranes, they resemble one another closely except in their protein concentration. The intestinal secretions, gastric juice and bile may be considered modified extracellular fluids which are normally reabsorbed. Furthermore, sweat resembles extracellular fluid, and urine is a highly modified capillary ultrafiltrate of plasma which is excreted in order to preserve the composition of all body fluids. Not only are the extracellular fluids the cellular environment which must be kept fairly constant by renal activity but they are the vehicle for carrying nutrition to the cells, the means of taking waste products away from the cells, the source of digestive fluids and the source of urine. It is not surprising, therefore, that disturbances of these fluids affect all parts of the body.

The fluid within the cells contains almost exclusively potassium and magnesium as basic ions, and proteins and organic phosphate as acid ions. Although the amount and concentration of potassium, magnesium, phosphate and protein within the cells are known to vary, actual analyses of tissues of animals have demonstrated that the relation of the amounts of these substances to one another is surprisingly constant. This constant relationship between the principal constituents of cells can be shown to persist in starvation, in fever, in thirst and after loss of extracellular electrolyte. Although variations in the water content of cells can frequently be demonstrated, these changes can usually be accounted for by changes in the concentration of sodium in extracellular fluid. Thus, although cellular constituents (phosphate and potassium) undoubtedly cross cellular membranes in response to nutritional or functional needs of the cells, the osmotic equilibrium in response to changes in concentration of sodium in extracellular fluid is attained principally by shifts of water,

1. Harrison, H. E.; Darrow, D. C., and Yannet, Herman: The Total Electrolyte Content of Animals and Its Probable Relation to Distribution of Body Water, J. Biol. Chem. **113**: 515 (March) 1936. Gamble, J. L.: Extracellular Fluid, Bull. Johns Hopkins Hosp. **61**: 151, 174 (Sept.) 1937. Peters, J. P.: Body Water, Baltimore, C. C. Thomas, Publishers, 1935. Darrow and Yannet.[3]

The term dehydration is retained because it is the one in general use and is no more objectionable than the other terms proposed, namely exsiccosis, anhydremia and hypohydration. Deficiency of extracellular water and electrolyte fits present concepts well but for obvious reasons will never be accepted as a name for a common condition. Acidosis and alkalosis are discussed only as far as they are manifestations of dehydration.

and the composition [2] of cytoplasm is not subject to great changes brought about by osmotic forces outside the cells.

In addition to protecting the composition of the cells, the type of osmotic equilibrium existing between intracellular and extracellular fluids explains why the volume of extracellular fluid cannot be maintained without normal amounts of sodium and chloride even if the total body water remains unchanged. To illustrate the point, one may conceive that a loss of sodium chloride from the body occurred without change in body water. This would reduce the osmotic pressure of extracellular fluids. However, since the intracellular fluids lose no electrolyte in response to this decrease in extracellular electrolyte, the osmotic pressure within the cells must attract water from the extracellular fluids. The shift of water will bring about osmotic equilibrium, but intracellular water will be increased while extracellular water will be decreased. This reaction is readily demonstrated in animals [3] and is accompanied by all the symptoms and signs of clinical dehydration. Observations on patients lead to the same conclusion. For instance, in certain patients with low concentration of sodium in serum all the symptoms and signs of dehydration develop. After treatment with physiologic solution of sodium chloride all these signs and symptoms disappear and serum concentrations return to normal. Since no gain in weight occurs, no change in body water has taken place during the obvious recovery of extracellular volume. Consequently one may conclude that the retention of sodium chloride made it possible to increase the volume of extracellular fluids by attracting water from the cells. Similar states of decreased volume of extracellular fluids and increased volume of intracellular fluids in both man [4] and animals [5] can be shown to persist for days if no sodium chloride is given. The observations demonstrate the importance of the content of extracellular electrolyte for the distribution of body water and the futility of treatment of dehydration by water and dextrose solutions alone.

Changes in the electrolyte pattern (or acid-base equilibrium) of the serum are frequent accompaniments of loss of extracellular water and electrolyte. If the loss of sodium is greater than the loss of chloride, relatively less than the normal amount of sodium is available to form bicarbonate. This condition results in acidosis. In alkalosis more than the normal concentration of bicarbonate is found in serum as a result of the relatively greater loss of chloride than sodium. Through the study of the composition of gastric juice, pancreatic juice, bile, diarrheal stools, urine and sweat, the various types of loss of extracellular electrolytye can be characterized as to their effect on acid-base equilibrium. In this sense most cases of acidosis and alkalosis may be regarded as special manifestations of deficit of extracellular electrolyte.

During deficiency of extracellular water and electrolyte a number of disturbances in renal function develop.[6] Thus when water is drunk during dehydration it is excreted more slowly than is normal despite a low concentration of sodium and chloride. When small deficits of sodium exist, the kidneys may eventually restore serum concentrations by excreting extracellular water. However, if large deficits of sodium persist for days, the concentrations of the serum remain low because the kidneys do not diminish the volume of extracellular fluid in order to preserve concentrations. Retentions of urea are explained by the reduction in glomerular filtrate. Moreover, when large deficiencies of sodium and chloride are present the kidneys fail to adjust the acid-base equilibrium of the blood, i. e. they fail to excrete the relative excess of chloride in acidosis and the relative excess of sodium in alkalosis. The explanation of these anomalies is not clear; in part they are brought about by the circulatory failure of dehydration, but in part they are probably dependent on the fact that the function of renal tubules is best carried out when serum concentrations are normal. These points are important, for they disclose that sodium chloride as well as water is necessary for restoration of renal function in dehydration.

Considerable quantities of potassium, phosphate and nitrogen are excreted at the time of the loss of sodium and chloride during the development of dehydration. While the interpretation of the losses of cellular constituents cannot be given with certainty, the losses tend to occur in such proportions as to indicate that cellular structures are breaking down as a whole. Furthermore, tissue analyses indicate that the cellular constituents have surprisingly constant relationships to one another. I believe that the losses of cellular constituents are the result of destruction or of utilization of cellular structures. Hence the decreases in amount of cellular water in the body are not the result of a specific deficiency of potassium, which, if replaced, would restore cellular water. From a therapeutic point of view the restoration of cellular water and electrolyte is not a simple process of providing water, magnesium, phosphate and potassium but a problem in nutrition which can be treated only with food.

It must be kept in mind that all types of marked dehydration are accompanied by the essential features of shock. By shock one refers particularly to the inability of the body to maintain the blood circulation and blood pressure, not primarily because of cardiac failure but rather because of decreases in the volume of circulating fluids and dysfunction of the capillaries.[7] Sometimes the disturbance is the result of loss of plasma proteins, which may be caused by hemorrhage or by localization of plasma at the site of a traumatic injury or at the site of a burn. However, loss of extracellular electrolyte alone can produce decreased plasma volume. Although plasma volume is maintained for a time at the expense of interstitial fluids, continued loss of extracellular electrolyte leads to diminished plasma volume. Part of the picture of vascular collapse is thought to be dependent on arteriolar constriction,[8] which, although it preserves the circulation to the brain, aggravates the deficiency in circulation elsewhere. If the plasma volume, blood pressure and circulation remain insuffi-

2. Harrison, H. E., and Darrow, D. C.: The Distribution of Body Water and Electrolyte in Adrenal Insufficiency, J. Clin. Investigation **17**: 77 (Jan.) 1938. Yannet, Herman, and Darrow, D. C.: The Effect of Hyperthermia on the Distribution of Body Water and Electrolytes in Brain, Muscle and Liver, ibid. **17**: 87 (Jan.) 1938. The disturbances in concentration of muscle potassium in cases of adrenocortical insufficiency and of all cellular constituents of the brain in cases of hyperthermia are not to be regarded as responses to osmotic forces but rather as cellular injury or altered cellular activity.

3. Darrow, D. C., and Yannet, Herman: The Changes in the Distribution of Body Water Accompanying Increase and Decrease in Extracellular Electrolyte, J. Clin. Investigation **14**: 266 (March) 1935.

4. McCance, R. A.: Experimental Sodium Chloride Deficiency in Man, Proc. Roy. Soc. London, s.B. **119**: 245, 1932.

5. Darrow, D. C., and Yannet, Herman: Metabolic Studies of the Changes in Body Electrolytes and Distribution of Body Water Induced Experimentally by Deficit of Extracellular Electrolyte, J. Clin. Investigation **15**: 419 (July) 1936.

6. McCance, R. A., and Widdowson, E. M.: The Excretion of Urine in Man During Experimental Salt Deficiency, J. Physiol. **91**: 222 (Nov. 26) 1937.

7. Blalock, Alfred: Acute Circulatory Failure as Exemplified by Shock and Hemorrhage, Surg., Gynec. & Obst. **58**: 551 (March) 1934.

8. Freeman, N. E.: Hemorrhage in Relation to Shock, Ann. Surg. **101**: 484 (Jan.) 1935.

cient for a few hours, secondary changes take place leading to dilatation of the capillaries and leakage of serum proteins into tissue spaces. These features of shock may be prevented by blood (or plasma) transfusions and are sometimes corrected by the same means. However, if severe shock is allowed to persist several hours, no effective therapy is available.

From the foregoing outline of the nature of the disturbances in dehydration, the general aims of treatment of all types are as follows: (1) restoration of sodium chloride along with sufficient water to enable the kidneys to adjust extracellular volumes and concentrations; (2) adjustment of acid-base equilibrium in certain cases of acidosis; (3) treatment of shock. Hypodermoclyses and intravenous infusions of physiologic solution of sodium chloride (or its modifications) are the most reliable means of replacing extracellular water and electrolyte. Intravenous infusions of sodium bicarbonate or sodium lactate are the means of treating acidosis when the saline solutions are inadequate. Although infusions of dextrose temporarily ameliorate various types of shock, the chief reliance must be placed on blood or plasma transfusions.

Although a great deal of sodium chloride can and should be given by mouth to many patients, the various forms of parenteral therapy must be the chief measures used in cases of severe dehydration. This procedure is made necessary not only by the need for quick effects but also by the amounts of the various solutions required. Furthermore, dehydration per se leads to nausea and vomiting, and many of the patients have nausea and vomiting as a cause of the illness. If nausea and vomiting are present, nothing should be given by mouth, since water or food that is vomited not only does no good but does harm by increasing the loss of electrolyte. The same untoward result may be brought about by food, and less often by water, when these aggravate a watery diarrhea. It cannot be emphasized too often that nothing should be done to increase the loss of electrolyte.

The treatment of dehydration is usually carried out first by a hypodermoclysis of physiologic solution of sodium chloride (from 10 to 60 cc. per kilogram of body weight) and an infusion (from 5 to 30 cc. per kilogram) of 5 or 10 per cent dextrose while the blood is being matched for a transfusion. If symptoms of shock are present, a blood transfusion of from 10 to 30 cc. per kilogram of body weight is given as soon as possible. The higher figure is used only in the most severe cases. Patients suffering from massive hemorrhage with dehydration are probably the only adult patients who require maximal amounts of blood, but many babies with severe dehydration require large transfusions. Since it is not possible always to predict which patients with severe dehydration will recover from circulatory collapse when extracellular water and electrolyte have been restored, many patients should be given transfusions who might otherwise recover with saline and dextrose solutions alone. Since hemoconcentration [8a] may be brought about by shock alone, a high red count is not a contraindication to transfusion. Recent work has shown that the increased viscosity of blood produced by a high concentration of red cells does not greatly increase the burden on the heart since the effective viscosity in arterioles approaches that of plasma, owing to axial flow. Although anemia may be an additional reason for giving a dehydrated patient a transfusion, shock is the chief indication. When the red cells by hematocrit are very high, plasma transfusion may be substituted for blood.

Many physicians prefer to use a continuous venoclysis [9] through which physiologic solution of sodium chloride, dextrose solutions and blood are given at a rate of from 1 to 3 cc. a minute. This procedure may be continued for from one to three or more days. The method has certain advantages of convenience to the physician and also is less painful than large hypodermoclyses. Its effectiveness is brought about not primarily by the fact that the solutions are delivered directly into the vein but by the fact that suitable amounts of salt, water and dextrose are supplied to the body and the fact that blood transfusions are carried out in shock. Certain limitations to the method must be realized. In babies, at least, it is difficult to carry out the procedure without tying a cannula or catheter in a vein, and it is difficult to keep the solutions flowing at a rate of less than 1,500 cc. in twenty-four hours. While injecting at a rate of 1,500 cc. in twenty-four hours may not be harmful to babies when continued for about twelve hours, it is probably too fast for longer periods. At a similar rate an adult would be receiving from 10 to 20 liters of fluid intravenously in twenty-four hours. Karelitz [10] injects about 750 cc. in twenty-four hours by tying a cannula in the vein of infants. He recommends using 5 per cent dextrose in physiologic solution of sodium chloride, since it supplies sodium chloride and does not lead to glycosuria, as does 10 per cent dextrose. Blalock has shown that, while intravenous administration of sodium chloride and dextrose temporarily improve the symptoms in shock, relapses are apt to occur and to be severe, owing to aggravation of the loss of plasma proteins. This fact may explain the frequency of edema following venoclysis. When prolonged intravenous injections of dextrose are suddenly stopped, hypoglycemia develops. In using venoclysis on adults, from 2 to 3 liters in twenty-four hours is apparently a suitable rate, though 5 liters has been given with good results. In babies from 750 to 1,000 cc. is probably a safe amount. When the deficits of salt are greater than is contained in these amounts of physiologic solution of sodium chloride, hypodermoclysis can be used to supplement the venoclysis. In most cases from 5 to 7 per cent dextrose should be added to physiologic solution of sodium chloride for babies, but 10 per cent dextrose added to saline solution may be used in adults. When salt is not necessary, dextrose solutions alone may be used.

No rule can be given as to how much sodium chloride must be given to a dehydrated patient. Recovery from clinical evidences of dehydration and a diuresis containing chloride may be used as guides. However, in adrenocortical insufficiency and in certain cases of hyposthenuric nephritis, excretion of chloride occurs even when body chloride is deficient. From data on animals and patients, I estimate that about one third of the extracellular electrolyte is lost in marked dehydration. For restoration of extracellular electrolyte in such cases, an amount of salt contained in physiologic solution of sodium chloride equal to from one fifteenth to one twelfth of the body weight (about 70 cc. per kilogram of body weight) is required. Smaller amounts

8a. By hemoconcentration reference is made to loss of plasma water, which leads to a rise in the proportion of red cells by hematocrit and to increase in the concentration of serum proteins if these are not simultaneously lost for the circulation.

9. Hendon, G. A.: Venoclysis, J. A. M. A. **95**: 1175 (Oct. 18) 1930. Hyman, H. T., and Hirshfeld, Samuel: The Therapeutics of the Intravenous Drip, J. A. M. A. **100**: 305 (Feb. 4) 1933.

10. Karelitz, Samuel: The Treatment of Toxicosis with the Aid of a Continuous Intravenous Drip of Dextrose Solution, Am. J. Dis. Child. **42**: 781 (Oct., pt. 1) 1931.

are needed in mild cases. When symptoms leading to loss of electrolyte continue, administration of physiologic solution of sodium chloride must be repeated.

In acidosis, hyperpnea usually indicates when sodium bicarbonate or sodium lactate is advisable. However, it is safest to calculate the dose necessary to restore the serum bicarbonate according to the method of Hartmann and Senn.[11]

$$\text{mM} = \frac{(60 - \text{CO}_2)\ 0.7\text{W}}{2.24}$$

In the equation, mM is millimols of sodium bicarbonate or sodium lactate. One millimol of sodium bicarbonate is 0.084 Gm. One millimol of sodium lactate is contained in 1 cc. of molar sodium lactate; CO_2 is the serum carbon dioxide content in volumes per cent, and W is body weight in kilograms.

In marked acidosis when serum carbon dioxide is not known, 5 millimols of sodium bicarbonate (0.4 Gm.) per kilogram of body weight is a safe dose. Hartmann recommends the injection of one half the calculated dose of sodium lactate intravenously and one half subcutaneously as one-sixth molar sodium lactate.

Molar sodium lactate is obtainable in sterilized ampules, which most physicians will find more convenient than sodium bicarbonate. Sodium bicarbonate is not obtainable as a sterile solution. Furthermore, it cannot be boiled or autoclaved in an unsealed vessel without forming the highly toxic sodium carbonate. Sodium bicarbonate may be weighed and added with aseptic precautions to sterile water or dextrose solution and injected intravenously in a 2 to 5 per cent solution. Both sodium bicarbonate and sodium lactate may be given by mouth, but in dehydration they are apt to be vomited.

SOLUTIONS USED IN DEHYDRATION

The following remarks on the solutions used in treating dehydration are given to indicate their limitations as well as their usefulness.

Physiologic Solution of Sodium Chloride (0.9 per cent sodium chloride).—Because of the convenience in preparation, physiologic solution of sodium chloride will probably continue to be the most frequently used solution for replacing deficits of extracellular electrolyte. The solution contains relatively more chloride than extracellular fluid, but with normal renal function the relative excess of chloride is excreted so as to free sodium, which may then combine with carbon dioxide to form bicarbonate. In renal disease or when circulatory collapse induces defective renal function, the injection of physiologic solution of sodium chloride may produce or aggravate acidosis. This effect is brought about chiefly by diluting the bicarbonate already in the body at a time when the kidneys are not excreting the excess of chloride. In acidosis this effect may be serious, even when renal function is fairly good, if loss of sodium in excess of chloride continues to occur, as in diarrhea. In most cases physiologic solution of sodium chloride is satisfactory for replacing extracellular electrolyte. It may be injected intravenously or subcutaneously.

Interstitial Salt Solution (sodium chloride 6.5 Gm., sodium bicarbonate 2.5 Gm. and potassium chloride 0.18 Gm. per liter).—Because of the presence of sodium bicarbonate, this solution must be autoclaved in sealed ampules. Fifty cc. ampules containing enough of the salts to make an interstitial salt solution when added to 500 cc. of sterile water are on the market.[12] This mixture closely resembles interstitial fluid in its electrolyte content. It has none of the disadvantages of physiologic solution of sodium chloride. In fact it may be used in practically all cases of acidosis without additional sodium bicarbonate. The solution may be given subcutaneously or intravenously. The disadvantages are a moderate increase in cost.

Lactate-Ringer's Solution (sodium chloride 6 Gm., sodium lactate 2.7 mg., potassium chloride 0.4 Gm. and calcium chloride 0.2 Gm. per liter).—This solution is prepared in concentrated form in ampules the contents of which are to be diluted twenty-five times with distilled water.[13] After absorption the lactate is metabolized so that the sodium lactate is converted to sodium bicarbonate. Its uses and advantages are the same as interstitial salt solution.

Dextrose Solutions.[14]—Solutions may be prepared by autoclaving dextrose (*d*-glucose) added to distilled water. However, owing to occasional febrile reactions with these preparations most physicians will prefer to add a 50 per cent solution sterilized in ampules to freshly distilled water. Although concentrations up to 50 per cent have been given intravenously, 5 or 10 per cent is the strength usually employed. High concentrations are irritating if they get outside the vein and may produce thrombosis. Dextrose solutions are given for their temporary value in shock, for their antiketogenic effect in ketosis, for their food value when food cannot be taken in adequate amounts by mouth, and finally as a source of water without salt. Dextrose solutions do not supply salt, so they cannot replace extracellular electrolyte, which is the most important loss in dehydration. However, by providing food and aiding the circulation, dextrose solutions help the kidneys to adjust extracellular volume and concentration when sufficient sodium chloride is available. When a patient who has no deficit of extracellular electrolyte must be given all fluids parenterally, intravenous dextrose provides a solution without salt which may be needed to take care of the imperceptible water loss. However, even abnormal kidneys excrete salt solution well if serum proteins are not reduced or cardiac failure is not present. Dextrose may be added to saline solutions for intravenous injection. The body can handle about 1 Gm. of dextrose per kilogram of body weight an hour. With continuous injection the amount of dextrose that can be utilized gradually increases. A small amount of glycosuria is harmless, but large amounts over prolonged periods are to be avoided.

I believe that the general practice of giving so-called isotonic solution of dextrose (5.5 per cent) subcutaneously is seldom justified, since it is irritating locally and over a period of several hours immobilizes water and extracellular electrolyte.[15] In a dehydrated patient this may aggravate an already dangerous depletion of extracellular water and electrolyte. The addition of 5 per cent dextrose to physiologic solution of sodium chloride does not get around this difficulty. A mixture of 2.5 per cent dextrose U. S. P. and 0.45 per cent sodium chloride (i. e. equal parts of physiologic solution of sodium chloride and 5 per cent solution of dextrose)

11. Hartmann, A. F., and Senn, M. J. E.: Studies in the Metabolism of Sodium *r*-Lactate: II. Response of Human Subject with Acidosis to the Intravenous Injection of Sodium *r*-Lactate, J. Clin. Investigation **11**: 337 (March) 1932.

12. Prepared by Sharp & Dohme Company, Philadelphia.

13. Prepared by Eli Lilly & Co., Indianapolis. This firm also prepares molar sodium lactate.

14. Several well known firms prepare satisfactory ampules of 50 per cent dextrose.

15. Schechter, A. J.: Cary, M. Katherine; Carpentieri, A. L. and Darrow, D. C.: Changes in Composition of Fluids Injected into the Peritoneal Cavity, Am. J. Dis. Child. **46**: 1015 (Nov.) 1933.

will not withdraw and localize appreciable amounts of extracellular water and electrolyte.

Acacia.—Ampules of 30 per cent acacia suitable for intravenous injection are available. This solution should be diluted to 6 per cent in physiologic solution of sodium chloride and injected slowly into the veins in amounts varying from 5 to 10 cc. per kilogram of body weight. The evidence seems clear that occasional deaths have followed intravenous injections of solutions which probably were properly prepared. Mild reactions are not infrequent. The injected acacia is taken up by the hepatic cells and remains in the cells for months or years. The latter feature seems especially dangerous when repeated doses are given, as has been recommended in nephrosis. The evidence, however, is equally clear that patients in shock can often be saved by acacia, but blood or plasma transfusions will serve the same purpose without similar risks. I believe that the use of acacia should be limited largely to patients in shock who cannot be quickly given transfusions with blood or plasma.[16]

SPECIFIC DISEASES

The following remarks on specific diseases or disturbances are given together with a recent reference in order to enable the reader to work out a method of treatment in the light of recent concepts.

Diarrhea.[17]—The loss of electrolyte in diarrheal stools resembles the loss of pancreatic juice in its effect on the body; i. e. more sodium than chloride is excreted, and acidosis is the rule. Although physiologic solution of sodium chloride is usually satisfactory for replacing the deficit, interstitial salt solution or lactate-Ringer's solution is more appropriate.

Diabetic Coma.[18]—During the development of coma, large amounts of sodium chloride as well as salts of keto-acids are excreted. This aspect of diabetic coma requires the administration of large amounts of sodium chloride and frequently sodium bicarbonate as well. I have used interstitial salt solution and have not felt the need of additional sodium bicarbonate. However, certain cases do require sodium bicarbonate (or sodium lactate), especially if physiologic solution of sodium chloride is the means used to replace extracellular electrolyte.

Nondiabetic Ketosis.[19]—Although ketosis occurs at all ages, severe acidosis in patients not suffering from diabetes occurs almost exclusively in young children, especially those under 2 years of age. As a result of vomiting, large deficits of extracellular electrolyte must be replaced by interstitial salt solution, lactate-Ringer's or physiologic solution of sodium chloride. Intravenous administration of solution of dextrose is also indicated to overcome ketosis. Insulin is undesirable.

Nephritis.[20]—In cases of acute nephritis, vomiting an alkaline gastric juice is the chief cause of the mild degree of acidosis seen. Although the patients are edematous, the serum concentrations of sodium are usually low. Interstitial salt solution (from 300 to 500 cc.) is often indicated, since it promotes diuresis. Intravenous administration of solution of dextrose is often made to increase the volume of urine, but its use has been disappointing in my experience.

In cases of chronic nephritis vomiting may in part be a cause of dehydration and acidosis. In addition, the kidneys, which form urine of fixed specific gravity, usually excrete sodium and chloride, even when the serum concentrations are low. Furthermore, excretion of an excess of acids leads to loss of sodium. In such cases deficiency of extracellular electrolyte often develops, especially if the patient is given a low salt diet. Often urinary excretion is improved by the addition of a mixture of sodium chloride 6 Gm. to sodium bicarbonate 2 Gm. to the diet in such amounts as to permit replacement of daily urinary loss. However, since chloride and sodium are not well concentrated in the urine by these patients, abnormally high concentrations of serum may occur.

Vomiting.—In cases of pyloric obstruction the vomited gastric juice is apt to be quite acid and its loss lead to alkalosis. While clinical alkalosis with symptoms of tetany is rare, chemical alkalosis with symptoms of dehydration is quite frequent. Although other types of vomiting can give the same result, the vomiting of nephritis, recurrent vomiting of children and that of some infections is probably alkaline, since these diseases are accompanied by acidosis. In alkalosis physiologic solution of sodium chloride is the appropriate treatment, but in acidosis one of the balanced solutions may be more appropriate.

Burns.[21]—The inflammatory exudate of burns is made up of plasma proteins, sodium chloride and water. Since the extracellular electrolyte is fixed at the site of the injury, the rest of the body suffers from deficiency of sodium chloride and sodium bicarbonate. In addition, if a patient with a burn is put in a tub containing water, the denuded surface is no barrier to the diffusion of extracellular electrolyte, and hence continuous tubs can of themselves lead to marked deficiency of extracellular electrolyte. Water in tubs or wet dressings used for treating extensive burns should contain sodium chloride at physiologic strength (9 Gm. per liter) or, better, sodium chloride 6 Gm. and sodium bicarbonate 2.5 Gm. per liter. The loss of plasma proteins makes transfusions essential for extensive burns. Physiologic solution of sodium chloride, interstitial salt solution or lactate-Ringer's solution must be given in maximum amounts in extensive burns.

Traumatic Shock.—Blalock [7] and others have demonstrated that plasma protein, water and electrolyte escape the capillary walls at the site of traumatic injury. These losses, as those in burns, must be treated with transfusions and saline solution.

Addison's Disease.[22]—Adrenocortical insufficiency is accompanied by the excretion of sodium and chloride in

16. Andersch, M., and Gibson, R. B.: Deposition of Acacia in the Liver and Other Organs and Its Excretion in Urine and Bile, J. Pharmacol. & Exper. Therap. **52**: 390 (Dec.) 1934. Maytum, C. K., and Magath, T. B.: Sensitivity to Acacia, Proc. Staff Meet., Mayo Clin. **7**: 216 (April 13) 1932. Good, R. W.; Mugrage, R., and Weiskittel, R.: Acacia Solution in Treatment of Shock, Am. J. Surg. **25**: 134 (July) 1934.

17. Powers, G. F.: A Comprehensive Plan of Treatment for So-Called Intestinal Intoxication of Infants, Am. J. Dis. Child. **32**: 232 (Aug.) 1926. Darrow, D. C.: Summer Complaint: Cholera Infantum, in the Practitioners Library of Medicine and Surgery, New York, D. Appleton-Century Company, vol. 7, p. 349. Karelitz.[10]

18. Kydd, D. M.: Salt and Water in the Treatment of Diabetic Acidosis, J. Clin. Investigation **12**: 1169 (Nov.) 1933. Atchley, D. W.; Loeb, R. F.; Richards, D. W., Jr.: Benedict, E. M., and Driscoll, M. E.: On Diabetic Acidosis: A Detailed Study of Electrolyte Balances Following the Withdrawal and Reestablishment of Insulin Therapy, J. Clin. Investigation **12**: 297 (March) 1933.

19. Darrow, D. C., and Cary, M. Katherine: A Clinical and Chemical Study of Nondiabetic Ketosis with Acidosis, J. Pediat. **6**: 676 (May) 1935.

20. Peters, J. P.: Salt and Water Metabolism in Nephritis, Medicine **11**: 435 (Dec.) 1932.

21. Blalock, Alfred: Experimental Shock: VII. The Importance of Local Loss of Fluid in the Production of Low Pressure After Burns, Arch. Surg. **22**: 610 (April) 1931.

22. Harrison, H. E., and Darrow, D. C.: Renal Function in Experimental Adrenal Insufficiency, Am. J. Physiol. **125**: 631 (April) 1939. Wilder, R. M.; Kendall, E. C.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H., and Adams, Mildred: Intake of Potassium, an Important Consideration in Addison's Disease: A Metabolic Study, Arch. Int. Med. **59**: 367 (March) 1937. Ferrebee, J. W.; Ragan, Charles; Atchley, D. W., and Loeb, R. F.: Desoxycorticosterone Esters: Certain Effects in the Treatment of Addison's Disease, J. A. M. A. **113**: 1725 (Nov. 4) 1939. Thorn, G. W.; Howard, R. P., and Emerson, Kendall: Treatment of Addison's Disease with Desoxycorticosterone Acetate, a Synthetic Adrenal Cortical Hormone, J. Clin. Investigation **18**: 449 (Feb.) 1939. Harrison and Darrow.[3]

the urine even when serum concentrations are abnormally low. However, in addition, potassium is not excreted except at a low urinary concentration even though serum concentration is high. As deficit of body sodium and chloride develops, the defect of renal function which is characteristic of deficit of extracellular electrolyte becomes superimposed on the disturbance in renal function due specifically to lack of cortical hormone. Without cortical hormone, sodium chloride must be given to patients with Addison's disease not only to replace the continually recurring deficits of sodium chloride but also to enable the volume of urine to be increased so that sufficient potassium can be excreted even at low urinary concentrations. Except during crises, sufficient sodium chloride can be given by mouth. When large amounts (more than 20 Gm.) are necessary, it is better to give sodium bicarbonate (or equivalent amounts of sodium lactate or citrate) along with sodium chloride in the proportions found in serum (i. e. sodium chloride 6 Gm. to sodium bicarbonate 2.2 Gm.). Lowering the intake of potassium lessens the requirement of sodium salts. While sodium salts do not restore all the functions that are carried out by cortical hormone, many patients can be kept alive with salt alone. Until recently salt seemed to be necessary for treatment even in conjunction with cortical extracts. The synthetic product desoxycorticosterone seems particularly effective in restoring renal function and, after any initial deficit has been replaced, large amounts of salt are contraindicated during treatment with this compound.

Heat Prostration and Heat Cramps.[23]—Sweating caused by hot weather or work in hot places can produce large deficits of sodium chloride. Usually water is drunk by patients having heat cramps, so that the deficit of sodium and chloride is greater than that of water. Sodium chloride relieves the patient, and salty meals or 0.1 per cent solution of sodium chloride used as drinking water will prevent the disturbance. In certain cases the mechanism regulating body temperature ceases to function and temperatures of from 40 to 45 C. (104 to 113 F.) may develop. Although deficits of salt should be treated in these cases, reduction of the body temperature by ice tubs is imperative, since permanent brain damage can be produced by the fever alone.

SUMMARY

The treatment of dehydration is the replacement of the deficit of extracellular electrolyte and water and maintenance of blood circulation and volume. Administration of solutions containing sodium chloride will correct the disturbance in the electrolyte pattern in alkalosis and in moderate acidosis. A balanced salt solution is advantageous in all types of severe dehydration, when renal function is defective or when continued loss of extracellular electrolyte may be expected. Sodium bicarbonate or sodium lactate can be given for severe acidosis. The maintenance of blood volume and circulation is essentially the treatment of shock, namely blood or plasma transfusion, intravenous infusion of dextrose and, at times, salt solutions.

789 Howard Avenue.

23. Ferris, E. B., Jr.; Blankenhorn, M. A.; Robinson, H. W., and Cullen, G. E.: Heat Stroke: Clinical and Chemical Observations in Forty-Four Cases, J. Clin. Investigation **17**: 249 (May) 1938. Talbott, J. H.: Heat Cramps, Medicine **14**: 323 (Sept.) 1935. Yannet and Darrow.[3]

Council on Pharmacy and Chemistry

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OVARIAN CONCENTRATE GLANULES, ANTI-MENORRHAGIC FACTOR GLANULES AND OVARIAN-ANTERIOR PITUITARY LIQUID NOT ACCEPTABLE FOR N. N. R.

Several products of the Armour Laboratories—Ovarian Concentrate Glanules, Anti-Menorrhagic Factor Glanules and Ovarian-Anterior Pituitary Liquid—have been advertised recently to physicians.

Ovarian Concentrate is marketed by Armour Laboratories for the treatment of acne, headaches, hypertrichosis and other disturbances incident to the sex cycle. According to the firm's circular, this preparation contains a "sterole fraction free from demonstrable estrogenic properties derived from the fat and lipoid fractions of whole ovaries by a special process originated in the Armour Laboratories." The firm fails to explain what physiologic activity is possessed by this fraction of the ovary as determined by appropriate experimental investigation. No bio-assays of any sort are included in their description of this product. The firm states: "The main beneficial influence of Special Ovarian Concentrate Armour is on the skin, not merely at puberty, but throughout the entire gonadal active period." Other claims for therapeutic application of this material are: "Special Ovarian Concentrate therapy has been reported to be beneficial occasionally in relieving the unpleasant symptoms, particularly headache, associated with dysmenorrhea and periodic acne . . ." and "Some clinicians have obtained promising results with Special Ovarian Concentrate Glanules in hirsutism associated with the adreno-genital syndrome." It is also mentioned that this material will lower blood pressure, which in certain patients, according to the firm, is desirable. The clinical data presented is quite meager, consisting of several testimonials as to its therapeutic value in acne and headaches. This evidence is obviously not based on sound experimentation, nor is it in accord with accepted scientific principles. The actual mechanism by which the claimed therapeutic responses are obtained is a deep mystery to even those who are well acquainted with the physiologic functions of the ovary.

Other than for progestin, animal ovaries have been found to be an unsatisfactory commercial source for ovarian hormones. If there is any evidence that factors can be extracted from ovaries other than progestin, the Armour Laboratories is obligated to publish this information. Conclusions must depend on the available literature, which at the present time does not supply adequate data to support the advertising claims.

A new concept of menorrhagia heretofore undescribed in the scientific literature has been developed recently by the Armour Laboratories. In spite of the lack of confirmatory evidence, the firm proposes that a certain sterol fraction of mammalian liver is effective in checking functional uterine hemorrhage. This extract is prepared in the form of "Anti-Menorrhagic Factor Glanules." It is reported by Wiles and Maurer (The Anti-Menorrhagic Factor of Mammalian Liver Fat, *Science* **89**:293 [March 31] 1939) that this lipoid preparation of liver, which is stated not to be vitamin K, was effective in diminishing the excessive bleeding in cases of functional menorrhagia. Curtis has also written in his textbook (Textbook of Gynecology, Philadelphia, W. B. Saunders Company, 1938, pp. 111 and 404) that Anti-Menorrhagic Factor-Armour was found satisfactory in the treatment of uterine hemorrhage. No other evidence—physiologic or clinical—is available, however, which supports or confirms these claims. In view of the absence of appropriate protocols and sufficient clinical and laboratory data, it appears that the firm has been either premature or overenthusiastic in promoting this preparation. Certainly, such evidence as is presented in the advertising would not be generally accepted as a sound basis for therapy.

A third preparation, Ovarian-Anterior Pituitary Liquid, resembles the others in the absence of scientific evidence, either physiologic or clinical, on which to base any claims for therapeutic effectiveness. It is in the nature of a shotgun mixture, supposedly supplying to patients certain ovarian hormones and at the same time stimulating with pituitary gonadotropic hormone the patient's own ovaries. From the firm's claim that each ampule of Ovarian-Anterior Pituitary Liquid is equivalent to 12 grains of fresh anterior pituitary lobe and 30 grains of fresh whole ovarian tissue, it appears certain that the activity in such an ampule cannot possibly amount to more than a few rat units of each hormone, which for therapeutic purposes is insignificant. Apparently the firm has become aware of its doubtful therapeutic value, since in answer to a request from the Council office for information regarding these products it stated that it has discontinued distributing advertising material for Ovarian-Anterior Pituitary Liquid.

It is generally accepted that the recent advances in the field of reproductive physiology have been truly remarkable. In the past decade or so the abundant experimental work has resulted in a rapid development of our knowledge of sex hormones and their use in therapy. Years ago our lack of knowledge of endocrine physiology in general served as an excuse for the administration of certain ovarian preparations whose action and potency were unknown. Today, however, there are excellent preparations available to the physician at reasonable cost which are pure, very potent and whose effects are quite well known. The Armour Laboratories shows an unwarranted amount of optimism in urging physicians to choose preparations of little or no scientific or rational basis rather than the pure, potent preparations whose physiologic and therapeutic actions have been competently investigated in the laboratory and clinic. In view of the present day status of sex hormones there seems to be no justification for the existence of the three products described unless more scientific evidence of their therapeutic worth is reported.

The Council declared Ovarian Concentrate Glanules, Anti-Menorrhagic Factor Glanules and Ovarian-Anterior Pituitary Liquid (The Armour Laboratories) unacceptable for inclusion in New and Nonofficial Remedies because of the lack of scientific evidence to justify their use and because of unwarranted therapeutic claims.

CHAPPEL LIVER EXTRACT ORAL, CHAPPEL LIVER EXTRACT SUBCUTANEOUS AND CHAPPEL LIVER EXTRACT CONCENTRATED INTRAMUSCULAR OMITTED FROM N. N. R.

Three dosage forms of Chappel Liver Extract manufactured by Chappel Laboratories, Rockford, Ill., have stood accepted in N. N. R. for a number of years. Representatives of the firm recently made inquiry whether or not the products would maintain an accepted status if they were distributed by a firm which has no product accepted in N. N. R. and which is not considered acceptable by the Council. The representatives were informed that the Council could not countenance the distribution of products by firms which have not been recognized by the Council and, therefore, transfer of these products from the Chappel Laboratories to another firm would be an infraction of the rules.

Under date of October 24 the Council was informed of an announcement to the drug trade that the preparations of Chappel Laboratories would be distributed by a firm not recognized by the Council, although the Chappel Laboratories will continue to manufacture and control the composition of the product. The Council feels in this instance that Chappel Laboratories has withdrawn from its agreement to abide by the rules of the Council; the appointment of a second firm as distributor means that Chappel Laboratories is no longer the responsible distributor for the products. The Council, therefore, under its rules, rescinds acceptance of the products Chappel Liver Extract Oral, Chappel Liver Extract Subcutaneous and Chappel Liver Extract Concentrated Intramuscular and announces their omission from New and Nonofficial Remedies.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

FATS AND OILS (*See* Accepted Foods, 1939, p. 30).

Pompeian Olive Oil Corporation, Baltimore.

POMPEIAN BRAND OLIVE OIL.

Analysis (submitted by manufacturer).—Specific gravity at 25 C. 0.911, saponification number 195, iodine number 86.32, solidification point of fatty acids 17.5 C., acid number 1.35, acidity as oleic acid 0.69%, cottonseed oil none, sesame oil none, peanut oil none, teaseed oil (Fitelson test) none.

Calories.—9 per gram; 256 per ounce.

Supreme Olive Oil Corporation, San Fernando, Calif.

BENEDETTO BRAND SPECIAL OLIVE OIL, an olive oil further refined by treatment with steam to remove the more volatile substances.

Analysis (submitted by manufacturer).—Moisture 0.04%, total solids 99.96%, ash none, fat (ether extract) 100.00%, crude fiber none, carbohydrates none, specific gravity at 25 C. 0.913%, free fatty acids (as oleic) 0.20%, unsaponifiable matter 0.41%, saponification value (Koettstorfer) 192.5%, iodine value (Wijs) 85.9%, smoke point 185 C., melting point (fatty acids) 26.2 C., cottonseed oil (Halphen test) negative, sesame oil (Baudouin test) negative, teaseed oil (Fitelson test) negative, refractive index at 40 C. 1.4621.

Calories.—9 per gram; 255.6 per ounce.

FOODS FOR SPECIAL DIETETIC PURPOSES (*See* Accepted Foods, p. 295).

The Chicago Dietetic Supply House, Inc., Chicago.

CELLU BRAND JUICE-PAK ELBERTA FREESTONE PEACHES (HALVES).

Analysis (submitted by manuacturer).—Moisture 86.4%, total solids 13.6%, ash 0.4%, fat (ether extract) 0.5%, protein (N × 6.25) 0.5%, crude fiber 0.4%, reducing sugar as invert sugar 4.0%, sucrose 5.2%, carbohydrates other than crude fiber (by difference) 11.8%, undetermined carbohydrates other than crude fiber (by difference) 2.6%.

Calories.—0.54 per gram; 15 per ounce.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT BRAND STRAINED LIVER AND BEEF SOUP WITH VEGETABLES, BARLEY AND RICE.

Analysis (submitted by manufacturer).—Moisture 84.3%, total solids 15.7%, ash 0.6%, fat (ether extract) 1.3%, protein (N × 6.25) 4.1%, crude fiber 0.3%, total carbohydrates other than crude fiber (by difference) 9.4%, copper 0.000240%, iron 0.00125%, specific gravity 1.061%.

Calories.—0.66 per gram; 18.7 per ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S BRAND STRAINED PEARS AND PEACHES.

Analysis (submitted by manufacturer).—Moisture 78.9%, total solids 21.1%, ash 0.2%, fat (ether extract) 0.1%, protein (N × 6.25) 0.3%, crude fiber 0.8%, carbohydrates other than crude fiber (by difference) 19.7%, calcium (Ca) 0.0074%, phosphorus (P) 0.0011%, iron (Fe) 0.0009%, copper (Cu) 0.0003%.

Calories.—0.81 per gram; 23 per ounce.

Gerber Products Company, Fremont, Mich.

GERBER'S BRAND DRY PRE-COOKED CEREAL FOOD, a flaked dried cooked mixture of wheat, semolina, yellow cornmeal, wheat germ, malt, dried brewers' yeast, dicalcium phosphate ($CaHPO_4.2H_2O$), sodium chloride, and iron and ammonium citrates (U. S. P.).

Analysis (submitted by manufacturer).—Moisture 5.6%, total solids 94.4%, ash 4.5%, fat (ether extract) 1.3%, protein (N × 6.25) 12.4%, crude fiber 1.3%, carbohydrates other than crude fiber (by difference) 74.9%, calcium (Ca) 0.675%, phosphorus (P) 0.7989%, iron (Fe) 0.0300%.

Calories.—3.60 per gram; 102 per ounce.

Vitamins.—Report of biologic assay (1939) submitted by the manufacturer indicates that the product contains approximately 2.8 international units of vitamin B_1 per gram, 80 per ounce, and 1.4 Sherman-Bourquin units of vitamin G (riboflavin) per gram, 40 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED SPINACH.

Analysis (submitted by manufacturer).—Moisture 94.1%, total solids 5.9%, ash 1.4%, sodium chloride 0.9%, fat (ether extract) 0.3%, protein (N × 6.25) 1.6%, crude fiber 0.8%, carbohydrate other than crude fiber (by difference) 1.8%, calcium (Ca) 23.0 mg. per 100 Gm., phosphorus (P) 7.1 mg. per 100 Gm., iron (Fe) 3.0 mg. per 100 Gm., copper (Cu) 0.227 mg. per 100 Gm.

Calories.—0.16 per gram; 4.5 per ounce.

Vitamins.—Protocols of biologic assay (1939) show that the product contains 16.3 U. S. P. units of vitamin A per gram, 463 per ounce, vitamin B_1 is practically absent; 0.13 Sherman-Bourquin units vitamin G (riboflavin) per gram, 3.8 per ounce; and, according to a report of chemical titration (1939), 0.35 international unit vitamin C per gram, 10.2 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 24, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

COMPARATIVE VALUE OF SERUM THERAPY AND CHEMOTHERAPY IN PNEUMOCOCCIC PNEUMONIA

Serotherapy of pneumococcic pneumonia is specific and is based on the fact that infection with pneumococci provokes in the invaded organism the production of antibodies. These antibodies unite with the antigenic or the capsular carbohydrate, thus rendering the pneumococci sensitized so that they are lysed, phagocytosed and destroyed. The mortality rate of pneumococcic pneumonia, when treated by the type specific serum, has been reported from various sources to be between 2 and 10 per cent. The significant advance presented by this therapy is not without certain minor disadvantages, which must be kept in mind. They are listed by Bullowa [1] as follows: (1) Serum administered must be specific for the infecting type; (2) some types, such as pneumococcus type III, are resistant to serum; (3) serum must be given intravenously; (4) there is a possibility of anaphylaxis, thermal reactions and serum sickness; (5) serum therapy is expensive. The development of the rabbit serum represents progress since it makes possible, as pointed out by Finland,[2] treatment of patients who are specifically sensitive to horse serum, particularly those who have previously received injections of horse serum. This applies particularly to type XIV pneumococcus pneumonia, in which horse serum has been known to give rise to severe and even fatal reactions because of its property of agglutinating human erythrocytes of all blood groups. The antipneumococcus type XIV rabbit serum does not possess this property.

In 1938 Whitby reported striking results obtained in experimental pneumococcic infections of mice with sulfapyridine, a sulfonamide derivative. His observations were soon confirmed by Long and his co-workers,[3] who demonstrated in animal experiments that the drug is about as efficient as is sulfanilamide in the treatment of experimental streptococcic, meningococcic and Clostridium welchii infections in mice and somewhat superior to sulfanilamide in the treatment of experimental pneumococcic, Friedländer's bacillus and staphylococcic infections in mice. Both investigators state that the new drug, unlike sulfanilamide, is irregularly absorbed and slowly excreted. The presence of the additional pyridine molecule does not make the drug more toxic than the sulfanilamide. In the animal body sulfapyridine exerts a bacteriostatic effect on the pneumococcus. Growth of the organisms is retarded, while the rate of antibody production is undiminished.

Evans and Gaisford [4] reported 100 cases of lobar pneumonia treated with sulfapyridine. The mortality rate in their experience was 8 per cent as compared with 27 per cent in a controlled series observed at the same time. Flippin and his associates [5] reported four deaths in a series of 100 cases and state that the drug brought about within twenty-four to forty-eight hours a critical drop in temperature followed by prompt clinical improvement. Similar favorable results are reported by Barnett and his co-workers.[6] MacLeod [7] calls attention to certain toxic effects of the drug, such as frequent nausea and vomiting, morbilliform rashes and cyanosis, and Finland [2] mentions severe mental and physical depression and marked excitement, impaired renal function and one instance of granulocytopenia. Finland also states that a number of cases have been reported in the literature in which,

1. Bullowa, Jesse G. M.: Serotherapy of the Pneumonias, J. A. M. A. **113:** 1402 (Oct. 7) 1939.

2. Finland, Maxwell; Spring, W. C.; Lowell, F. C., and Brown, J. W.: Specific Serotherapy and Chemotherapy of the Pneumococcic Pneumonias, Ann. Int. Med. **12:** 1816 (May) 1939.

3. Sulfapyridine, editorial, J. A. M. A. **112:** 540 (Feb. 11) 1939.

4. Evans, G. M., and Gaisford, W. F.: Treatment of Pneumonia with 2-(p-Aminobenzenesulfonamido) Pyridine, Lancet **2:** 14 (July 2) 1938.

5. Flippin, H. F.; Lockwood, J. S.; Pepper, D. S., and Schwartz, Leon: The Treatment of Pneumococcic Pneumonia with Sulfapyridine, J. A. M. A. **112:** 529 (Feb. 11) 1939.

6. Barnett, H. L.; Hartmann, A. F.; Perley, Anne M., and Ruhoff, Mary B.: The Treatment of Pneumococcic Infections in Infants and Children with Sulfapyridine, J. A. M. A. **112:** 518 (Feb. 11) 1939.

7. MacLeod, C. M.: Chemotherapy of Pneumococcic Pneumonia, J. A. M. A. **113:** 1405 (Oct. 7) 1939. Sulfapyridine: Report of the Council on Pharmacy and Chemistry, ibid. **114:** 327 (Jan. 27) 1940.

after treatment with sulfapyridine alone, relapse of the pneumonia occurred in the same or other portions of the lung. Such relapses have occurred from three to ten or more days after complete subsidence of fever and after what was considered to be an adequate dose of the drug.

In view of the almost equally enthusiastic reports regarding these new therapeutic agents, the practitioner is confronted with the problem of choosing the one or the other or the combination of the two. Studies relative to their comparative effectiveness have thus far been few. Finland and his co-workers report a mortality rate of 13 per cent in 167 cases treated with the specific serum alone. The death rate in ninety-five cases treated with sulfapyridine alone was 15 per cent. A group of eighty patients was chosen for combined treatment with sulfapyridine and serum. This group contained a greater proportion of older patients and the incidence of bacteremia was about twice that in the cases treated with serum alone and three times that in the cases treated with sulfapyridine alone. The mortality in this group was only 22 per cent. In similar cases treated without specific serums or drugs the expected fatality rate is between 75 and 90 per cent; with specific serums alone it is from 50 to 60 per cent.

When serum alone is administered, a defervescence occurs after six to twenty-four hours in the great majority of cases, whereas sulfapyridine must be continued for at least forty-eight to seventy-two hours or even longer after the defervescence. Finland feels that sulfapyridine may be started in all cases as soon as the diagnosis of pneumonia is established, with the exception of cases in which there is polymorphonuclear neutropenia. He further feels that the drug, at least for the time being, should not be given to patients with jaundice or known or suspected liver or kidney disease. He would give specific serums as soon as possible to patients over 40 years of age and to all pregnant or recently parturient women in whom any of the common types of pneumococci are found, and in all cases in which the blood cultures yield specific types of pneumococci. He concludes that both specific serums and sulfapyridine are effective agents and that in cases of severe involvement the use of the combination of the drug and specific serum has shown definite effects in reducing the fatality in the severest group, in which the mortality is the highest. Dowling and Abernethy [8] present a careful clinical study undertaken to evaluate the relative value of the two agents. In a group of ninety cases serum alone was administered and in a group of 130 sulfapyridine alone. The two groups were about similar in severity and were treated at the same time. The total mortality rate for the serum treated group was 16.7 per cent, while that for the sulfapyridine treated group was 11 per cent. The mortality rate among the patients to whom the serum was administered during the first four days was 10.8 per cent. The mortality rate among thirty-four patients receiving sulfapyridine during the first four days was less than 3 per cent. Sulfapyridine seemed to be more effective for older patients and for patients with involvement of two or more lobes, while the two agents seemed to be of equal value in bacteremic cases. Empyema developed in six of the ninety-six serum treated cases (6.1 per cent) and in four of the 136 sulfapyridine treated cases (2.9 per cent).

The clinical evidence furnished thus far establishes the efficacy of both serotherapy and the new chemotherapy in lowering the death rate from pneumococcic pneumonia. The relative value of the two methods and the indications for their employment, as well as for the combined use of the two, await further clinical studies.

8. Dowling, H. F., and Abernethy, T. J.: The Treatment of Pneumococcus Pneumonia: A Comparison of the Results Obtained with Specific Serum and with Sulfapyridine, Am. J. M. Sc. **199**: 55 (Jan.) 1940.

HORMONE REFRACTORINESS

Persistent endocrine therapy often leads to the development of hormone refractoriness. A continuation of the therapy after this condition develops is of little value and may cause deleterious results. Collip [1] and his co-workers showed that hormone refractoriness may develop in experimental animals even though endocrine products from the same animal species are selected and that acquired hormone refractoriness is serologically transferable. Determination of the origin, nature and method of action of the serum component responsible for this transfer is of basic clinical interest.

The refractoriness serum components have been considered to be inhibiting hormones or hormone-destroying enzymes presumably formed as a result of a compensatory hypertrophy of antagonistic endocrine glands. This theory finds some histologic support [2] and is apparently confirmed by the indirect serologic evidence recently reported by Sulman,[3] of the Rothschild Hospital, Jerusalem.

Sulman tested the antigenic properties of a wide range of gonadotropic substances in laboratory animals. He found that rabbits injected with crude gonadotropic substance develop relatively high-titer complement-deviating antibodies in their blood serum. When purified gonadotropic substance is injected, however, either alone or in combination with a protein carrier (swine serum), complement-deviating antibodies are not demonstrable. He concluded from this negative evidence that hormones per se are nonantigenic and do not acquire antigenicity when combined with alien proteins. In his opinion the apparent antigenic properties of crude gonadotropic substance must be attributed to accompanying impurities. Antihormones, therefore, "must be looked upon as protective ferments, but certainly not as antibodies."

1. Collip, J. B.: J. Mount Sinai Hosp. **1**: 28 (May-June) 1934.
2. Collip, J. B.; Selye, Hans, and Williamson, J. E.: Endocrinology **23**: 279 (Sept.) 1938. Sevringhaus, Aura E., and Thompson, K. W.: Proc. Soc. Exper. Biol. & Med. **40**: 627 (April) 1939.
3. Sulman, Felix: J. Exper. Med. **65**: 1 (Jan.) 1937.

A quite different conclusion is currently drawn from indirect physiologic evidence by Gordon, Kleinberg and Charipper,[4] of the Department of Biology, New York University. It is generally believed by immunologic theorists[5] that the reticulo-endothelial system is the essential tissue responsible for the synthesis or internal secretion of specific antibodies. The New York investigators therefore tested the effects of reticulo-endothelial extirpation and blockade on the rate of development of hormone refractoriness. They found that a daily subcutaneous injection of pregnant mare serum gonadotropin, for example, caused a rapid initial increase in ovarian weight in normal female rats, maximum weight being reached on the seventeenth day. Endocrine refractoriness became apparent after that date. In spite of continued daily injections of the hormone the ovarian weight rapidly decreased and was reduced to that of untreated controls by the end of two months. In parallel tests with splenectomized female rats the initial rate of ovarian increase was twice as fast and the development of refractoriness delayed till after the twenty-fifth day.

Even more striking differences were obtained by combining splenectomy with reticulo-endothelial blockade, the latter being effected by intraperitoneal injections of trypan blue. Hormone refractoriness, with resulting regression in ovarian weight, was not observed after such complete reticulo-endothelial exclusion even though the daily hormone injections were continued for fifty-five days. Titration of antihormones by serum transfer showed a quantitative parallelism between delayed refractoriness and antihormonal serum titer.

Their conclusion that integrity of the reticulo-endothelial system is essential for the development of hormone refractoriness was confirmed by a study of other hormones. The effects of splenectomy on the development of testicular hypertrophy in male rats following daily injections of gonadotropic substance was in accordance with the same law. The effects of splenectomy plus dye blockade on the metabolic rates of guinea pigs following daily injections of thyrotropic hormone were also confirmatory. Hormone refractoriness developed by the twentieth day in guinea pigs with intact reticulo-endothelial systems but was delayed for at least fifty days in splenectomized dye blockade controls.

Gordon and his colleagues argue that, since participation of the reticulo-endothelial system is essential for the development of hormone refractoriness, it is a logical presumption that antihormones are the result of immunologic adaptations. Antihormones therefore must be considered as true antibodies in spite of their alleged failure to give routine complement deviating test tube reactions. A modification of the routine in vitro technic might conceivably give positive results.

4. Gordon, A. S.; Kleinberg, William, and Charipper, H. A.: J. Exper. Med. **70**: 333 (Oct.) 1939.
5. Perla, David, and Marmorston, Jessie: The Spleen and Resistance, Baltimore, Williams & Wilkins Company, 1935, chapters 3 and 4.

Current Comment

THE NATIONAL CONFERENCE ON MEDICAL NOMENCLATURE

Elsewhere in this issue (page 669) appears the program of the National Conference on Medical Nomenclature, which will be held in Chicago on March 1. The purpose of this conference is to discuss certain problems of medical terminology and classification and probably arrange for their continued consideration by the formation of permanent nomenclature committees. The national societies in specialized fields of medicine have been invited to send delegates to the conference.

PERIPHERAL VASCULAR DISEASE

The February issue of the *Archives of Surgery* is devoted to a symposium on peripheral vascular disease containing contributions from leading authorities in this field. Among the subjects discussed are the treatment of occlusive arterial disease, amputation, differential diagnosis and peripheral vascular spasm from tobacco. Special articles are devoted to surgical intervention on the sympathetic nervous system, heparin in surgical treatment of the blood vessels, the effect of estrogens on vascular spasm and a review of nearly 1,000 cases of diabetic gangrene and other aspects of the problem. The symposium is a mine of information on the latest advances in the knowledge and treatment of peripheral vascular disorders.

EFFECT OF PECTIN ON BACTERIAL GROWTH

Since recognition of the therapeutic value of raw apple in certain diarrheas, a number of investigations have been made on the alleged germicidal action of pectin on intestinal organisms. Recently Prickett and Miller[1] have observed the effect of pectin and nickel pectin on bacterial growth. Their procedure involved the addition of various samples of pectin to nutrient broth and the subsequent incubation in these mediums of typical cultures of Escherichia coli isolated from feces. Plate counts were made at various intervals. Control of the p_H was carefully observed. Thirteen different commercial pectins were studied. From the results obtained it was concluded that there is no reason to believe that pectin per se is bactericidal and that whatever unfavorable effect on bacterial growth is noted in pectin broth is the result of acidity. A further investigation was made in which nickel chloride in known amounts was added to three different nickel free samples of pectin. The results from the use of these preparations indicated that the bactericidal effect of nickel varies directly with its concentration. The p_H of the medium, the buffer effect of pectin and the presence or absence of fermentable material modify but do not essentially change this effect. Clearly, however, the results of these in vitro observations cannot yet be interpreted as explaining the mechanism of action of pectins on the flora of the human gastrointestinal tract.

1. Prickett, P. S., and Miller, N. J.: In Vitro Effect of Pectin and Nickel Pectin on Bacterial Growth, J. Pediat. **15**: 710 (Nov.) 1939.

ORGANIZATION SECTION

NATIONAL PHYSICIANS' COMMITTEE

BOARD OF DIRECTORS MEETS FOR CONSIDERATION OF NEW PROPOSED LEGISLATION

The following report pertaining to the activities of the National Physicians' Committee has been submitted and is published for the information of the readers of THE JOURNAL:

On February 12, at a regular meeting of the Board of Trustees of the National Physicians' Committee for the Extension of Medical Service, action was taken to increase the number of voting trustees from twelve to fifteen members. Because of continuing ill health, Dr. John A. Hartwell tendered his resignation. The resignation was accepted and Dr. Charles Gordon Heyd, of New York, was unanimously elected to fill the vacancy. Drs. Harvey B. Stone, Baltimore, James A. Paullin, Atlanta, Ga., Edward J. McCormick, Toledo, Ohio, and Charles Dukes, Oakland, Calif., were elected to membership on the Board of Trustees.

The organization setup of the National Physicians' Committee for the Extension of Medical Service consists of a Central Committee, now numbering more than 425 physicians, on which every state has representation and which is being constantly increased; a Board of Trustees, of which Dr. Edward H. Cary, Dallas, Texas, is chairman, Dr. Austin A. Hayden, Chicago, secretary, and Dr. N. S. Davis III, treasurer, and a Management Committee of five of the trustees. Drs. Cary, Hayden and Davis are members of the Management Committee. At the Chicago meeting Dr. W. F. Braasch, of Rochester, Minn., and Dr. Edward H. Skinner, of Kansas City, were elected to membership.

Chairman Cary reported in detail on the prospect of federal legislation during the present session of Congress. According to this report there was the likelihood of the President's hospital bill being enacted into law. He considered this of lesser importance than the prospect of a continuation of adverse propaganda that was confusing the people and tending to destroy the confidence of the public in the effectiveness of American medicine and in the practicing physician. He pointed out that the National Physicians' Committee had assumed a tremendously important responsibility and undertaken an exceedingly difficult task. He indicated that the initial response from the profession had been gratifying beyond all expectations.

Dr. Hayden, as secretary, presented a report that was unanimously approved. This report indicated that the response had been actually nationwide, with physicians from every state sending contributions and participating by way of Central Committee membership. In order of the amount of contributions, Illinois was first and Pennsylvania second, closely followed by New York, Minnesota, California, Texas and Ohio, with Connecticut and Washington making the best relative showings on a basis of population. It was reported that many county medical societies and clinics had contributed to the support of the Committee.

Dr. N. S. Davis III, as treasurer, submitted a financial statement which indicated that, with a continuation of the support of physicians, a sound financial structure would result that would insure effective action.

Executive Administrator John M. Pratt reported that the board of directors of the National Retail Druggists Association had voted approval and for active cooperation and that the Drug and Pharmaceutical Manufacturers groups and the owners of medical buildings throughout the United States were most sympathetic. In addition, hospital executives and members of the dental profession are interested.

In adjourning, Chairman Cary stated that there was no doubt as to the need for the organization, the importance of the task that had been undertaken, or the outstanding success of its preliminary efforts. However, said Dr. Cary, "the ultimate effectiveness of the Committee will be determined by the extent to which it receives support from the rank and file of all practicing physicians."

THE CLINICAL PATHOLOGIST

MEMORANDUM SENT TO THE BOARD OF TRUSTEES OF THE AMERICAN MEDICAL ASSOCIATION

It is not usually considered that clinical pathology is one of the youngest branches of medicine. The first pathologist who devoted full time to the subject, Dr. Frederic Sondern, of New York, is still alive and is an honored member of the American Medical Association, having served on many of its important committees. Previous to twenty-five years ago, one could scarcely speak of clinical pathology as a specialty since so few men had given particular thought or study to the subject and since there was no organization of the subject in the form of private practice.

Those men who had a particular leaning toward the application of pathology to clinical medicine were in a large part members of the American Association of Pathologists and Bacteriologists, which society was developed along rather broad scientific concepts and which has constantly disclaimed any particular interest in the economic problems relating to the practice of pathology.

It was under these conditions that the American Society of Clinical Pathologists was organized in 1921. The charter members desired the society to serve as an organization for those men who were primarily interested in clinical pathology and its application to the actual practice of medicine. They fully recognized the importance and desirability of having men join the society whose interests were also in research. In addition to these aims, it was the intention of the group to place clinical pathology on a basis equal to that of any other specialty in medicine, both professionally and economically.

The American Society of Clinical Pathologists early took consideration of the problem of laboratory technicians. It has established the Registry of Medical Technologists, in which nearly 9,000 technicians are now registered, and has established the standards of proficiency and standard curriculums for approved training schools. This is now a cooperative enterprise of the American Society of Clinical Pathologists and the Council on Medical Education and Hospitals of the American Medical Association. The Society took the initiative in establishing the American Board of Pathology. The Society has sponsored annual seminars in tumor diagnosis and frequent hematologic seminars, and it has also sponsored and financed the Tumor Registry at the Army Medical Museum. This unique wealth of material is now available to any physician for study. It inaugurated the Committee on the Evaluation of Serodiagnostic Tests for Syphilis in cooperation with the United States Public Health Service. The Society now has a membership of 640 physicians, which is an extremely large proportion when it is

realized that probably not over 900 men could qualify as pathologists in this country. A number of these pathologists are engaged exclusively in teaching and institutional work.

Some of the principal purposes of the American Society of Clinical Pathologists are:

1. To improve the status of pathologists in hospitals, with the hope that the practice of medicine in this field by hospitals will be suppressed;

2. To influence practitioners of medicine to utilize the clinical pathologist as a consultant and to recognize that he has special training, knowledge and skill which most clinicians do not possess and which is essential for the proper care of patients;

3. To educate the public to the usefulness in the community of the functions of physicians who specialize in clinical pathology;

4. To define the functions of state board of health laboratories and restrict their practice to purely public health fields;

5. To make the practice of pathology sufficiently remunerative so that it will attract young, well trained men into the field, that pathology may develop its full usefulness.

For many years pathologists have clearly recognized that their field of medicine is the one through which most forms of corporate medical practice, state medical practice and many forms of socialized medicine would enter. Like roentgenology, many of the tools utilized by the pathologists are mechanical devices and the nature of the specialty demands the hands of many technical assistants. This has made it possible to use the field of pathology as an entrance for many schemes which have retarded the development of this specialty so that it has not reached the same degree of development as have many other medical specialties. To be sure, the origin of this difficulty took place before physicians began to specialize in this field. The early recognition of the paramount importance of the laboratory in the control of contagious diseases, and the obligation of states and the federal government in their control, automatically placed a certain part of the field of laboratory medicine in the hands of the state departments of health.

Pathologists today do not doubt the necessity for the control of contagious diseases by state and federal governmental agencies, nor do they object to the proper expansion of governmental laboratories in fields in which public health control measures are involved. On the other hand, pathologists do oppose the improper expansion of this service to include the medical care, from a laboratory standpoint, of individuals whose illness is not of public health concern and where services are rendered without regard to the ability of the patient to pay for such services and are rendered at taxpayers' expense. No one has any quarrel with provisions for laboratory service to those unable to pay, but one may here even question the premise that this service is always best rendered by a state board of health laboratory. The results of the studies of the Committee on the Evaluation of Serodiagnostic Methods for Syphilis reveal that 62 per cent of state department of health laboratories in this country are as yet incapable of performing satisfactorily tests for syphilis. Pathologists oppose the practice of pathology by laymen. It has previously been established that pathology is a medical specialty, now recognized as such by the American Medical Association, and its practice by any one not licensed to practice medicine is not only detrimental ultimately to the public but is actually illegal.

It is heartening to pathologists to observe the zeal with which the American Medical Association has fought against laymen who practice medicine in opposition to other branches of medicine and has even invited litigation by them. If the practice of pathology by those unlicensed to practice medicine continues to grow as it has in the past, physicians will be forced to abandon the field. The growth of pathology demands that capable young physicians enter the field and, unless satisfactory inducements are provided, few will elect this specialty.

While the expansion of the functions of the state board of health laboratories has been realistically studied for many years by the American Society of Clinical Pathologists, their importance in curtailing the work of private practitioners of pathology has been emphasized by recent developments of the program of the United States Public Health Service. The situation has become more acute recently by the issuance of Supplement 10 of the United States Public Health Service, entitled "Control of the Venereal Diseases in the United States." It is no secret that the government exercises strong control on the actions of state boards of health, and through its regulations and methods of approval of grants-in-aid and appropriations to these boards it can and does enforce its desires on the methods and services of such boards.

Supplement 10 at first reading does not contain conflicting statements in regard to laboratory service, and evidence indicates that most state boards of health and certainly nearly all officials of the federal government are interpreting paragraphs 2 and 3 of section XV on the basis of paragraph 3:

> 2. The state laboratory and any local laboratory receiving funds under this act shall provide laboratory services for the venereal diseases on the same basis as such service is provided for other communicable diseases. No state department of health shall be entitled to receive payments under this act unless such laboratory services are provided within that state.
>
> 3. Free diagnostic and treatment facilities shall be provided by all health departments or clinics receiving funds under this act for (*a*) the diagnosis and emergency treatment of all patients who apply; (*b*) all patients referred by a private physician either for continued treatment or for consultative advice and opinion; and (*c*) all patients unable to afford private medical care. The determination of the ability of patients to pay for private medical care shall be the responsibility of the state or local health department or constituted welfare agencies within these areas. Clinics collecting fees from semi-indigent patients shall not receive assistance under this act unless such fees are used solely by the venereal disease clinic for improvement of diagnostic and therapeutic services rendered therein.

If this interpretation is generally followed, it will result in such a curtailment of private and hospital pathologic laboratories that many will have to be abandoned and the curious phenomenon will result of pathologists contributing taxes to force themselves out of earning a livelihood. This is not, however, the major consideration. The loss of widely distributed pathologic laboratories and their services would be a definite detriment to all concerned, including the patient. If it be established that the state board of health laboratories can take over this branch of medicine, there is no logical reason why it cannot and will not invade all branches of medicine. Pathologists have from time to time called attention to this fact and it is with some satisfaction, yet apprehension and regret, that this prediction is beginning to be realized by all physicians.

Owing to the efforts of certain members of the Kansas State Board of Health, a new interpretation of these quoted paragraphs in Supplement 10 has been exposed and a letter from Dr. R. A. Vonderlehr, Assistant Surgeon General in charge of the Division of Venereal Diseases, has approved this new interpretation. This interpretation follows the literal wording of paragraph 2, which places the laboratory service for the control of venereal diseases on the same basis as such services for other communicable diseases. Since state laboratories generally have extended these services to embrace a great variety of laboratory tests, without regard to the ability of persons to pay, at first sight this new interpretation appears not to alter current practices of state board of health laboratories. Nevertheless, it provides a means whereby a radical correction of the state board of health practices is now possible and feasible. The Kansas State Board of Health acted immediately following the approval of this policy by the United States Public Health Service. The board passed the following resolution:

> The Kansas State Board of Health hereby instructs the state laboratories to furnish laboratory service for diagnosis of all communicable diseases at public expense to all state and county board of social welfare clients, social types of public assistance clients: to all inmates or patients of federal, state, county, or municipal institutions and homes: and to all other residents of the state of Kansas who find it difficult or impossible to pay the costs of laboratory service of this kind in the usual and customary manner.
>
> In order to assist in the provision of this service, the Board has approved the following request form, which will be placed in use effective Jan. 2, 1940:
>
> REQUEST FOR SPECIMEN EXAMINATION BY
> THE KANSAS STATE BOARD OF HEALTH LABORATORY
>
> I do hereby certify that it will be difficult or impossible for .....
> ..... of .....
> (name) (street) (city) (county)
> to pay for this examination in the usual and customary manner. I request therefore that this test be made for me without charge by the Kansas State Board of Health Laboratory.
>
> (Physician's signature) .....
> .....
>
> (Technical data in regard to test on reverse side of card.)
>
> The Board also instructs the State Laboratories to provide laboratory service, at public expense and without requirements of request forms, to all county and city health officers, all employees of the Kansas State Board of Health and all staff members of federal, state, county and municipal institutions and homes who desire to utilize the services of the state laboratories in conjunction with their official duty.

The Board feels, however, that it should not provide services of this kind at taxpayers' expense to persons able to provide for themselves. Since for practical reasons the Board must leave the determination of this question to the physicians of the state, it respectfully requests the cooperation of all physicians in making certain that state laboratory services are furnished only to persons within the above approved categories. All regulations in conflict herewith are revoked.

After the adoption of this resolution by the Kansas State Board of Health, the following letter was sent to Dr. F. P. Helm, secretary of the State Board of Health of Kansas, by Dr. R. A. Vonderlehr, Assistant Surgeon General, United States Public Health Service:

Federal Security Agency
U. S. PUBLIC HEALTH SERVICE
Washington, D. C.

Nov. 29, 1939.

Dr. F. P. Helm, Secretary
State Board of Health
Topeka, Kansas

Dear Doctor Helm:

I have your letter of November 23d and the copy of the resolution which was passed by the Kansas State Board of Health at a special meeting held November 22d.

The action taken by the Board places laboratory tests for venereal diseases in the state of Kansas on the same basis as such services are provided for other communicable diseases, and meets the letter of the Surgeon General's Regulations Governing Allotments and Payments to the States for Venereal Disease Control Activities for the Fiscal year 1940, as set forth in paragraph 2, section XV.

Sincerely yours,
R. A. VONDERLEHR,
Assistant Surgeon General,
Division of Venereal Diseases.

Many plans have been proposed to curtail the expansion of state laboratories, but in the opinion of the Executive Committee of the American Society of Clinical Pathologists the resolution adopted by the Kansas State Board of Health and approved by the United States Public Health Service is the most practical plan yet presented, and, if followed in the spirit in which it was adopted, it would do much to clarify the relation of private practitioners of pathology to state board of health laboratories.

The American Society of Clinical Pathologists respectfully requests the Board of Trustees of the American Medical Association to extend its good offices in suppressing the practice of laboratory medicine by laymen and to use its strong influence toward establishing a proper relationship between state board of health laboratories and physicians who practice pathology, using as a basis for action the resolution recently passed by the Kansas State Board of Health. Such an effort on the part of the Board of Trustees of the American Medical Association would be consistent with its activities with regard to the practice of other specialties in medicine.

L. W. LARSON, Bismarck, N. D.,
President.
T. B. MAGATH, Rochester, Minn.,
Chairman of Executive Committee.
A. S. GIORDANO, South Bend, Ind.,
Secretary-Treasurer.
W. M. SIMPSON, Dayton, Ohio,
Member of Special Committee.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

GEORGIA

During the past, several agencies in Georgia have been interested in graduate medical education. At times these groups have carried on their work independently and at other times they have participated in cooperative programs. As the history of these groups is interrelated, the complete story of their independent efforts is best told separately with comments on combined efforts that have been successful.

EMORY UNIVERSITY SCHOOL OF MEDICINE

In 1919 the Georgia Department of Public Health in cooperation with Emory University School of Medicine instituted an annual one week clinic, which was devoted primarily to lectures and conferences on venereal diseases. In 1922 the Alumni Association of the school joined in this enterprise and added the clinics in general medicine and surgery. These clinics have continued to the present and are now given during the week preceding commencement.

In July 1926 the school of medicine gave a two weeks course of instruction for physicians in general medicine and surgery. After this course had been given for a number of years, it was finally discontinued. In 1930 the departments of medicine and surgery cooperated with the Negro physicians of Atlanta in organizing one medical and one surgical conference for them each month. Negro physicians participated actively in these conferences. Patients from the Negro division of the Grady Hospital were presented with their case histories, which were discussed by members of the medical faculty. Special emphasis was placed on the diagnostic and therapeutic procedures available in the hospital. These conferences were continued for three years and were apparently well attended by about half of the Negro physicians of the city. They have since been discontinued.

In June 1930 the department of obstetrics and gynecology offered a six day postgraduate course to Negro physicians of the state. The Julius Rosenwald Fund aided by providing traveling expenses and a stipend for those who enrolled. About fifty Negro physicians from various parts of the state attended. In August 1931 a similar six day course was given under the same auspices and was as well attended.

In July 1935, with the financial cooperation of the Julius Rosenwald Fund, the department of pediatrics offered a five day course to a limited number of Negro physicians of the state. Those who attended were given a daily allowance. This effort was repeated in 1936 and the attendance was again limited to twelve physicians.

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE

In a report on extension courses offered to practicing physicians in Georgia during the 1924-1925 session, the dean of the school of medicine stated that it was the purpose of the school to put its facilities at the disposal of the alumni and of all other physicians in the state who cared to avail themselves of them. This was part of the university's plan to stimulate statewide interest in the school of medicine. Clinics were conducted also in a number of towns conveniently located throughout the state. Members of the medical school faculty gave lectures preceding these clinics, and physicians practicing in the locality participated in the conduct of the clinic. About 1928 Emory University School of Medicine joined with the University of Georgia in the conduct of these clinics. Arrangements were made whereby members of the faculties of both schools participated.

In 1932 the state board of health assumed the responsibility for arranging these extension programs. In 1934 the Extension Division of the University of Georgia assumed sponsorship of the clinics on behalf of the university's school of medicine. At this time it was decided to include the Medical Association of Georgia, so as to indicate to the profession throughout the state that the association approved of the program. The state department of health requested county medical officers to arrange meeting places. At this time the state was divided conveniently, with each school responsible for its own geographic area.

In 1935 the School of Medicine of Emory University was not represented in the extension clinics. In 1936 it was decided that the initiative for future graduate clinics must come from the communities in which they were to be held. A committee was appointed by the Medical Association of Georgia to assume this responsibility and the state department of health discontinued initiating plans for such clinics.

Each year since 1936 the University of Georgia, with the assistance of the Julius Rosenwald Fund during the first two years, has given a one or two weeks course in general medicine, surgery, pediatrics and obstetrics for Negro physicians at the

medical school. Lectures, ward rounds and clinics for small groups, clinical pathologic conferences and x-ray demonstrations are included. In 1939 patients were assigned to student physicians for the first time. Members of the faculty of medicine supervised the instruction and assumed responsibility for the course. Attendance has ranged from twenty-five to fifty. Additional instruction has been requested in essential laboratory procedures, physical diagnosis and clinical pathology.

OTHER GRADUATE ACTIVITIES

In January and February and in October and November 1939 the state department of public health held a series of two meetings in each of nine and ten localities of the state respectively. The meetings were given under the auspices of the local county medical society in each section. Four speakers who were members of the department of public health conducted the programs. Subjects included were laboratory aids, obstetrics, tuberculosis, venereal diseases including congenital syphilis, and cancer. Three hundred physicians practicing in ninety-two counties attended the first series and 217 from seventy-one counties attended the second series.

The Atlanta Graduate Medical Assembly held its first annual four day session in 1938. This assembly is sponsored by the Fulton County Medical Society and is administered by an executive committee of this society. The first year the county society underwrote the program, but since then this has not been necessary. From fourteen to sixteen guest speakers are invited each year to speak on subjects of general interest. The lectures and exhibits are held in a local hotel. A registration fee of $5 is charged; interns and medical students are admitted without charge. Commercial exhibits aid in financing. Total attendance has ranged from 400 to 580.

MEDICAL ASSOCIATION OF GEORGIA

At the 1939 annual session of the Medical Association of Georgia, the committee on postgraduate medical education submitted a report which was essentially as follows:

It is felt that postgraduate instruction, in order to be effective, should be conducted in connection with the two medical schools of the state. It is thought that such instruction should be given to small groups or to individuals by special arrangement. Individual instruction in hospital wards might include a study of several subjects. Small group instruction is believed to be more desirable for student physicians than didactic talks to large groups. Four postgraduate centers might be established where clinical facilities are known to be adequate. Occasionally extension work in other communities might be worthwhile. The necessity of the state association appropriating adequate funds for financing a statewide program is emphasized.

The House of Delegates of the Medical Association of Georgia in July 1939 published the following statement on postgraduate study:

As there are several agencies in the state engaged in postgraduate work and no cooperation between them, all state agencies are requested to coordinate their work and organize their activities under one group.

In January 1939 the chairman of the postgraduate committee, Dr. G. Lombard Kelly, notified all county medical societies in Georgia of the action of the house of delegates at its 1936 session, which called for the initiation of extension teaching programs by county societies. The chairman reported that the state medical association was prepared to conduct courses and hold clinics in various parts of the state whenever requested to do so. It had been recommended earlier that programs should center around local hospitals, utilizing patient clinics for demonstration of new diagnostic, including laboratory, procedures. Under this plan, instructors would not be limited to members of faculties of medicine.

Of the 2,756 physicians licensed in the state, 1,938 were members of the Medical Association of Georgia.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. 2284 has been reported to the House, with recommendation that it pass, proposing to authorize the President to appoint 100 acting assistant surgeons for temporary service in the Medical Corps of the Navy.

Bills Introduced.—S. 3350, introduced by Senator McCarran, Nevada, and H. R. 8437, introduced by Representative White, Idaho, propose to authorize the President through the agency of the Director of the Geological Survey, Department of the Interior, to provide for employing unemployed citizens in the discovery and development of the mineral resources of the public lands of the United States and to provide for furnishing the persons so employed with such subsistence, clothing, medical attendance, hospitalization, transportation if deemed expedient, and cash allowance, as may be necessary during the period they are so employed. S. 3323, introduced by Senator McNary, Oregon, proposes to provide pension benefits for certain Spanish-American War veterans equivalent to those granted to Civil War veterans. S. 3365, introduced by Senator Murray, Montana, proposes to amend the Social Security Act in several particulars. One proposed amendment would bring within the coverage of the act service performed in the employ of a corporation, community chest, fund or foundation, organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals. Corporations, community chests, funds or foundations organized and operated exclusively for religious purposes will remain exempted from the requirements of the act, if the bill should be enacted. H. R. 8233, introduced by Representative Knutson, Minnesota, proposes to amend the Social Security Act so as to exempt from its provisions service performed in the employ of a voluntary employees' benefit association that provides for the furnishing of medical care and/or hospitalization to the members of such association or their dependents. H. R. 8392, introduced by Representative Ferguson, Oklahoma, proposes that the Farm Security Administration shall be established as a permanent agency within the Department of Agriculture and that the Reconstruction Finance Corporation be directed to make loans to the Secretary of Agriculture not in excess of an aggregate amount of $150,000,000 for each fiscal year for the purpose of enabling the Farm Security Administration to carry out the duties devolved on it. H. R. 8394, introduced by Representative Ludlow, Indiana, would authorize the Secretary of the Treasury to cause to be struck a medal of appropriate design with suitable emblems, devices and inscriptions to be determined by the Secretary of the Treasury, or a certificate suitable for framing, to commemorate the faithful nursing of the women who voluntarily offered their services and who served with the Army during the influenza epidemic of 1918. H. R. 8439, introduced by Representative Havenner, California, proposes to authorize a federal appropriation of $300,000,000 to assist public agencies and nonprofit organizations in safeguarding the health of the nation, not exceeding $100,000,000 of which is to be devoted to projects for the construction, improvement or operation of hospitals or related facilities.. H. R. 8478, introduced, by request, by Representative Rankin, Mississippi, proposes to grant benefits to World War veterans suffering with paralysis, paresis or blindness, or who are helpless or bedridden. H. R. 8493, introduced by Representative Byron, Maryland, proposes to provide pensions, compensation, retirement pay and hospital benefits to certain reserve officers of the Army of the United States. H. R. 8514, introduced by Representative Byrns, Tennessee, proposes to provide for eight-hour shifts for nurses in hospitals on the Canal Zone, Isthmus of Panama.

STATE MEDICAL LEGISLATION

New Jersey

Bills Introduced.—A. 141 provides that in each school district the medical inspector, or the nurse under his immediate direction, shall make eye and ear tests of the pupils of the schools in the district at least once in each school year. The tests must be made with such scientific devices and under such rules and regulations as may be approved and prescribed by

the state board of education. S. 78 proposes an appropriation of $15,000 to be expended by the state department of health for the purchase and free distribution of antipneumococcic serum for the treatment of persons affected with pneumonia and financially unable to purchase the serum and for determining the type of pneumococci from persons suspected or known to have pneumonia.

New York

Bills Introduced.—S. 927 and A. 1399 propose to amend the education law of New York in relation to the issuance of medical licenses so as to provide that an applicant who meets the requirements of the law as to preliminary and professional education, who presents evidence of successful practice or professional experience satisfactory to the commissioner of education and who presents evidence satisfactory to the commissioner that he has been duly licensed by proper authority in any other state, territory, district or possession of the United States after passing examinations which were equivalent as to subject matter and standards to those of New York at that time may without further examination, on payment of a fee of $25 and on submitting such further evidence as the commissioner may require, receive from the commissioner in his discretion an endorsement of his license or diploma conferring all rights and privileges of a license issued by the department after examination. S. 1158 and A. 1420, both introduced at the request of the New York State Temporary Commission to Formulate a Health Program, propose to impose, as a condition precedent to medical licensure, an internship requirement of not less than twelve months in a hospital in the United States or Canada approved and registered as maintaining at the time a standard satisfactory to the commissioner of education and the state board of medical examiners. A. 1373 proposes that every physician shall immediately give notice to the health officer of every case of infantile paralysis under his care, the notice to contain such information concerning the case as shall be required by the state commissioner of health. Like notice must be given by the person in charge of any hospital, dispensary, asylum or other similar public or private institution. The bill also proposes to create in the state department of health a division of infantile paralysis control and the commissioner of health through this division is directed to continue to conduct investigations of the cause, mortality rate, methods of treatment, prevention and cure of infantile paralysis and allied diseases, including the nature and extent of the facilities available in the several counties and cities of the state, for the diagnosis and treatment of these diseases, and is further directed to cooperate with local health authorities, physicians, hospitals, clinics and voluntary associations, in the development of suitable facilities for the diagnosis, treatment and control of infantile paralysis.

Virginia

Bills Introduced.—House Joint Resolution 28 proposes to create a commission consisting of five members, one to be a member of the senate, two to be members of the house of delegates and two to be appointed by the governor from the citizens at large to (*a*) study rural health conditions in Virginia, (*b*) study the adequacy and cost of medical and hospital care available to rural people, (*c*) analyze the various programs for providing clinics and preventive medical service in Virginia in comparison with what is being done in these fields in other states, (*d*) analyze the applicability of various plans for health, medical and hospital care and insurance to rural Virginia, and (*e*) recommend ways and means of providing more adequate health, medical and hospital care for rural people in Virginia. In carrying out its functions, the commission is to be authorized to enlist the aid of the Medical Society of Virginia, the Virginia State Dental Association, the Virginia State Department of Health and certain other named agencies and organizations. The commission is to be required to submit its report and recommendations to the governor and to the members of the general assembly on or before July 1, 1941.

OFFICIAL NOTES

THE NEW YORK SESSION

American Physicians' Art Association

The American Physicians' Art Association will hold its annual exhibit, June 9-15, during the time of the annual session of the American Medical Association in New York. The headquarters of the physicians' art association will be located in a booth, which Mead Johnson & Co. has donated, on the third floor of the technical exhibits at the Grand Central Palace on Lexington Avenue. In this booth, which will be 27 by 30 feet with the entire front open, will be placed some of the extraordinary art objects in the exhibit. The booth is number 303A. In addition, the entire top floor—exhibit hall, banquet room, roof gardens, piazzas—of the Belmont-Plaza Hotel, which is across the street from the Waldorf Astoria Hotel, will be turned over to the American Physicians' Art Association. The New York Physicians' Art Club will act as host. The eighteen California Rhythm Doctors will make a special trip to New York to play at the banquet of the art association at the Belmont-Plaza, Wednesday night, June 12. The members of this orchestra, in addition to being expert instrumentalists, are also singers, comedians and specialty artists. Dr. Hannibal De Bellis, 316 West Eighteenth Street, New York, is chairman of the dinner committee. Many prizes have been donated for the prize-winning exhibits. The $1 dues for this season should be mailed at once to the treasurer of the association, Dr. Raleigh W. Burlingame, San Francisco Hospital, San Francisco. Details of the exhibit plans and other arrangements may be obtained by writing to the president of the American Physicians' Art Association, Dr. Henry N. Moeller, 327 Central Park West, New York, or to the chairman of the arrangements committee, Dr. Abraham Wolbarst, 114 East Sixty-First Street, New York.

NATIONAL CONFERENCE ON MEDICAL NOMENCLATURE

On March 1, at the Headquarters Office of the American Medical Association, there will be a Conference on Medical Nomenclature designed to bring out discussion on a number of important problems connected with terminology. The program is as follows:

NATIONAL CONFERENCE ON MEDICAL NOMENCLATURE

535 North Dearborn Street, Chicago

March 1, 1940

HAVEN EMERSON, M.D., CHAIRMAN

PROGRAM

1. Trends in Medical Terminology.....Morris Fishbein, M.D.
2. Purposes, Function and Use of Standard Classified Nomenclature of Disease.....George Baehr, M.D.
3. International Nomenclature and the International List of Causes of Death.....Halbert L. Dunn, M.D.
4. A Standard Nomenclature of Operations.....H. Perry Jenkins, M.D.
5. The Adaptation of the Standard Classified Nomenclature of Disease to Hospital Morbidity Reports....E. H. L. Corwin, Ph.D.
6. Punch Cards and Tabulating Methods as Applied to Morbidity Reports .....Mrs. Stella F. Walker
7. Massachusetts Experience in Reporting Mental Disorders Neil A. Dayton, M.D.
8. The Classification of Tumors for Clinical Purposes—Preliminary Report .....Bowman C. Crowell, M.D.
9. Progress Report on Revision of the Standard Classified Nomenclature of Disease.....Edwin P. Jordan, M.D.
10. Problems of Terminology in the Field of Physical Medicine .....Frank H. Krusen, M.D.
11. Nomenclature and Classification of Allergic Disorders Samuel M. Feinberg, M.D.
12. Problems of Dermatologic Nomenclature.....Howard Fox, M.D.
13. Terminology in Diseases of the Blood-Forming Organs Raphael Isaacs, M.D.
14. Diseases of Endocrine Origin.....Elmer L. Sevringhaus, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Hospital News.—The psychiatric department of Mount Zion Hospital, San Francisco, announces a series of four discussions on psychotherapy in general practice as follows: March 6, "History of Psychotherapy"; March 13, "Essence of Therapeutic Relationship"; March 20, "Modern Treatment of Neuroses," and March 27, "Psychotherapy in Children."

Clinical Conferences and Postgraduate Courses.—The committee on postgraduate activities of the California Medical Association is sponsoring clinical conferences and postgraduate courses throughout the state under the auspices of the local county medical societies. One will be held in Bakersfield on March 16 by the Kern County Medical Society. At the clinical conferences in Fresno on February 2, 9 and 16 the speakers were Drs. Garnett Cheney, San Francisco, and Edmund W. Butler, San Francisco, on peptic ulcers and pneumonia, respectively; Ernest W. Page, Berkeley, some problems in gynecology and obstetrics, and Clark M. Johnson and Edgar A. W. Wayburn, San Francisco, genito-urinary and venereal diseases and disorders of nutrition, respectively. The Fresno County Medical Society was host. A symposium on gastrointestinal diseases constituted the course before the Santa Cruz, San Benito and Monterey county medical societies, February 1, in Salinas; the speakers were Drs. Fred H. Kruse, David A. Wood and Eric Liljencrantz, San Francisco.

GEORGIA

Emergency Station Dedicated as Memorial to Physician.—An American Red Cross Emergency Station on the Dawson-Shellman highway was dedicated recently to the late Dr. Albert Leroy Crittenden, Shellman, who died, Jan. 25, 1934. Dr. Crittenden once served as president of the Randolph County Medical Society. This is the second of three stations to be dedicated to Randolph County physicians, newspapers reported. The others are in honor of Drs. George V. Moore and Frederick D. Patterson, Cuthbert. Included among the speakers at the Shellman dedication was Dr. Job C. Patterson, Cuthbert, president of the state medical society.

ILLINOIS

Handbook on Pneumonia.—A handbook on pneumonia has been published by the state department of health and is available free to physicians in Illinois who send requests to the department at Springfield or to the committee on education of the Illinois State Medical Society, 30 North Michigan Avenue, Chicago. Prepared by the state advisory committee on pneumonia control, the booklet contains in brief but comprehensive form specific, up-to-date information on the diagnosis and treatment of the pneumonias. The technic of utilizing various therapeutic measures is included.

New Assistant Director of Health.—Dr. Roland R. Cross, Dahlgren, superintendent of the health district in Southern Illinois since 1933, has been appointed assistant director of the Illinois State Department of Health. Dr. Cross graduated at the American Medical College, St. Louis, in 1912. He spent six years in Indian work as a member of the U. S. Public Health Service and served in the World War. He was president of the Jefferson-Hamilton Counties Medical Society in 1931. The position to which Dr. Cross has been appointed has been vacant since 1937, when Dr. Albert C. Baxter, Springfield, present health director, was named acting director of the department.

New Mental Hygiene Post Created.—Dr. Conrad S. Sommer, Chicago, director of the Illinois Society for Mental Hygiene, has been appointed to the newly created post of state superintendent of the division of mental hygiene, the Chicago *Tribune* reports. The new division is in the state department of public welfare and was created on the recommendation of the Institute of Medicine of Chicago. Dr. Sommer has taken a year's leave of absence from the society of mental hygiene. In his new capacity he will supervise medical care and treatment of the 30,000 patients in the ten state mental institutions, and will be responsible to the state alienist. Dr. Sommer graduated at the University of Illinois College of Medicine in 1932. He was resident psychiatrist at the Illinois Research Hospital from 1932 to 1933 and fellow at the Institute for Juvenile Research from 1935 to 1937. For the last three years he has been connected with the Illinois Society for Mental Hygiene and assistant clinical professor of psychiatry at Loyola University School of Medicine.

Chicago

Hospital News.—Dr. Carl J. Wiggers, professor of physiology, Western Reserve University School of Medicine, Cleveland, lectured at Michael Reese Hospital February 6, on "Characteristics and Variations in Normal Heart Sounds." The lecture was under the auspices of the cardiovascular group.

Session on Venereal Diseases.—The venereal disease commission of the Chicago Medical Society has planned a program, February 28, to further its policy of utilizing the clinical material of the Municipal Social Hygiene Clinic. Dr. Bell F. Korman, chief of the department of syphilis in childhood at the clinic, will present an outline of the treatment of syphilis in childhood, with a statistical report of the results of 800 cases and a demonstration of juvenile tabes, dementia paralytica and syphilitic keratitis. Discussions will be offered by Drs. Noel G. Shaw, Isador M. Levin and Harold A. Rosenbaum. The meeting will be held at the social hygiene clinic.

Dr. Irving S. Cutter Honored.—Robert R. McCormick, editor and publisher of the Chicago *Tribune*, has given the property at the northwest corner of Lake Shore Drive and Pearson Street to Northwestern University "for the purpose of establishing and maintaining a fund, the income from which is to be spent for research in the medical school." The fund is to be called the "Irving S. Cutter Fund for Medical Research," in honor of the dean of the medical school, who is also health editor of the *Tribune*. Dr. Cutter has been dean since 1925 and medical director of Passavant Hospital since 1928.

Branch Meetings.—Dr. George K. Fenn discussed "Electrocardiography" before the Southern Cook County Branch of the Chicago Medical Society recently. At a meeting of the Irving Park Branch, January 16, Dr. Frederick H. Falls discussed "Indications and Technic of Cesarean Section." Dr. Italo F. Volini addressed the Jackson Park Branch, January 18, on "The Modern Treatment of Pneumonia." The West Side Branch was addressed by Dr. Joseph F. Jaros, January 18, on "Electrocoagulation." At a joint meeting of the Chicago Medical Society and the Stock Yards Branch, January 18, the speakers were Drs. Bert I. Beverly and Julius H. Hess on "Problems of Adolescence" and "Infant Feeding as We See It Today." The Calumet Branch devoted its January 19 meeting to a symposium on diseases of the stomach. Dr. George E. Wakerlin addressed the Northwest Branch, January 19, on "The Pathogenesis and Therapy of Non-Nephritic Hypertension." Dr. Michael L. Mason discussed "Treatment of Open Wounds" before the South Chicago Branch, January 23.

INDIANA

Society News.—The Fountain-Warren County Medical Society was addressed in Covington, February 1, by Drs. Wemple Dodds, James M. Kirtley and George A. Collett, Crawfordsville, on "Toxemia of Gestation: Its Pathology, Diagnosis and Treatment."——At a meeting of the Dearborn-Ohio County Medical Society in Lawrenceburg, February 1, Dr. Louis P. Stickley, Cincinnati, discussed jaundice.

IOWA

Physician Honored.—The Eldora community award, sponsored by the American Legion post, was presented to Dr. Joseph R. Winnett in January. No public demonstration was made at the time because of the illness of Dr. Winnett. A graduate in 1912 of Drake University College of Medicine, since absorbed by the State University of Iowa College of Medicine, Dr. Winnett has been practicing in Eldora since 1914, except when he was a medical officer at Camp Pike near Little Rock, Ark., during the World War. The award is a silver loving cup.

KANSAS

Society News.—Dr. Ward Darley Jr., Denver, discussed chronic undulant fever before the Shawnee County Medical Society in Topeka, February 5.——The Wyandotte County Medical Society was addressed, February 6, by Dr. Paul M. Krall, Kansas City, on "Essential Factors in the Production of Edema." The society was addressed, February 20, by Drs. Tom R. Hamilton, Kansas City, on "The Thymus Gland (A Study of 7,500 Autopsy Cases)" and William J. Feehan,

Kansas City, spondylolisthesis. At a meeting, January 16, the speakers were Drs. Elden S. Miller and LaVerne B. Spake, Kansas City, on "Complications of Diabetes" and "Diagnosis and Treatment of Deafness" respectively.

MASSACHUSETTS

Personal.—Dr. Ernest M. Morris, formerly health commissioner of Fall River, has been appointed district health officer for all of Hampden County and most of Hampshire County in the western part of the state, with offices in Westfield, it is reported. He succeeds Dr. Charles E. Gill.

Dr. Keefer Named Wade Professor of Medicine. — Dr. Chester S. Keefer, associate professor of medicine, Harvard Medical School, Boston, has been appointed Wade professor of medicine at Boston University School of Medicine, effective on February 1. Dr. Keefer graduated at Johns Hopkins University School of Medicine, Baltimore, in 1922, serving on the staff from then until 1926. The subsequent two years he was a member of the faculty of the University of Chicago, going to Peiping Union Medical College, Peiping, China, in 1928. He was at Harvard from 1930 until his recent appointment. Dr. Keefer succeeds Dr. Reginald Fitz, who plans to engage in private practice.

Society News. — Dr. Edward J. O'Brien Jr., Boston, addressed the Wachusett Medical Improvement Society in Worcester, February 7, on "Surgical Treatment of Prostatic Obstruction."——Dr. Samuel A. Levine, Boston, discussed "A Routine Office Cardiovascular Examination" before the Worcester District Medical Society in December. Among others, Dr. George W. Ballantyne, Worcester, addressed the society, January 10, on "Diabetes and Pregnancy."——Dr. Chester M. Jones, Boston, discussed "Substernal Pain, a Confusing Symptom: Its Clinical Significance" before the Hampden District Medical Society in Springfield, January 23.——Dr. James W. Sever, Boston, will address the Pentucket Association of Physicians March 14 on "Recent Advances in Orthopedic Surgery."

MICHIGAN

Changes in Health Officers.—Dr. Robert F. Hall, Mason, assistant medical director of the health unit in Ingham County, has been appointed in charge of the unit in Bay City. Dr. Lorin E. Kerr Jr., Charlotte, has been named to succeed Dr. Hall in Ingham County. Dr. Hall is the first full time health officer in Bay City, succeeding Dr. George W. Moore, who held the office on a part time basis for fifteen years, it is reported.

Society News.—Dr. James H. Mitchell, Chicago, addressed the Wayne County Medical Society, February 12, on "Differential Diagnosis of the Cutaneous and Mucous Membrane Lesions of Syphilis."——At a meeting of the Jackson County Medical Society in Jackson, January 16, a symposium on "Michigan Medical Service and Medical Welfare Relief" was presented by Dr. Henry R. Carstens, Detroit; Dr. L. Fernald Foster, Bay City; William J. Burns, LL.B., Lansing, and Mr. J. D. Laux, Lansing.

New Building for Dental Research. — The new W. K. Kellogg Foundation Institute for Graduate and Postgraduate Dentistry will be dedicated in Ann Arbor, April 3. The speakers will include Dr. Clarence O. Simpson, St. Louis, whose address will be on radiology. A memorial will be unveiled in honor of Willoughby D. Miller, American dentist (1853-1907). By a series of experiments beginning about 1880, Dr. Miller demonstrated the essential relation between mouth bacteria and decay of the teeth. He showed that a dissolution of the lime salts in dentin was caused by acid elaborated by microorganisms. He produced caries in the laboratory. His work was summarized in a book published in 1890, entitled "Micro-Organisms of the Human Mouth."

MINNESOTA

New Director of School Hygiene. — Dr. Arthur E. Karlstrom has been appointed director of school hygiene and health of Minneapolis. He succeeds Dr. Malvin J. Nydahl, who resigned to become head of the bureau of crippled children, state division of social welfare. Dr. Karlstrom graduated at the University of Minnesota Medical School in 1936.

Society News. — Dr. Erwin R. Schmidt, Madison, Wis., discussed "Peritonitis Secondary to the Appendix" before the Hennepin County Medical Society, Minneapolis, February 5. ——Dr. Willard O. Thompson, associate clinical professor of medicine, Rush Medical College, Chicago, gave a Mayo Foundation lecture in Rochester, January 18, on "Hypogenitalism in the Male."

MISSOURI

Physician Honored. — The Dallas-Hickory-Polk County Medical Society held a special meeting and banquet in Bolivar recently to honor Dr. Joseph F. Roberts, Bolivar, on his eighty-ninth birthday. Dr. Roberts has practiced medicine for sixty-seven years, sixty-two of them in Bolivar; he still goes to his office each day, according to the state medical journal. Dr. Homer L. Kerr, Crane, was toastmaster at the dinner and Dr. James R. McVay, Kansas City, president of the state medical association, gave the principal address. About seventy-five physicians and their friends attended. Dr. Roberts graduated at Missouri Medical College in 1877.

Society News.—Dr. Robert Elman, St. Louis, addressed the Kansas City Academy of Medicine, January 19, on "Surgical Aspects of Protein Metabolism." Dr. Wallace M. Yater, Washington, D. C., addressed the academy, February 16, on "Late Advances in the Study of Diseases of the Blood Vessels." —— Dr. George Wilse Robinson Sr., Kansas City, addressed the Lawrence-Stone County Medical Society, January 16, on "Newer Methods of Treatment of the Psychoses." ——The speakers before the South Central Counties Medical Society in West Plains, January 11, were Drs. George W. Hogeboom, Springfield, on "Changing Trends in the Surgical Treatment of Gallbladder Disease"; Francis B. Camp, Springfield, "Sulfanilamide and Its Derivatives," and William J. Wills, Springfield, "Use of Sulfanilamide in the Treatment of Gonorrhea."

NEW YORK

Eastman Lecture.—Philip E. Smith, Ph.D., professor of anatomy, College of Physicians and Surgeons, Columbia University, delivered the Eastman Memorial Lecture at the University of Rochester School of Medicine on January 23. His subject was interrelationship between the hypophysis and the reproductive system.

Food Poisoning from Sodium Fluoride.—An outbreak of sixty-nine cases of food poisoning at a state institution for adolescent and young adult males on December 26 was traced to contamination with sodium fluoride used to kill roaches. The illness occurred among 143 inmates who had luncheon half an hour earlier than the remaining 488. The onset was sudden, most of the victims having developed symptoms within ten minutes after the meal. Chocolate pudding was immediately suspected and another dessert was substituted for the remainder of the luncheon. None of those who ate later became ill. Samples analyzed in the laboratories of the state department of health were found to contain from 0.1 to 0.3 per cent of sodium fluoride.

New York City

Twenty-Fifth Class Reunion. — The twenty-fifth reunion of the class of 1915 of New York University College of Medicine will be held at Delmonico's, Saturday, May 11. Further information may be obtained from Dr. Henry M. Scheer, 522 West End Avenue, president.

Doctors' Orchestra.—The Doctors' Orchestral Society of New York now has headquarters at the National Hospital for Speech Disorders, through the interest of the medical director, Dr. James Sonnett Greene. The auditorium and other rooms have been placed at the disposal of the orchestra for a permanent home and the first rehearsal was held there on January 18.

Professor Appointed.—Dr. Howard W. Potter, professor of clinical psychiatry, College of Physicians and Surgeons of Columbia University, has been appointed clinical professor in the department of neurology and psychiatry at Long Island College of Medicine. Dr. Potter graduated at Columbia in 1913. He served as assistant physician at Bloomingdale Hospital (now the New York Hospital, Westchester Division) from 1916 to 1920, and at Hudson River State Hospital from 1920 to 1921. From 1921 to 1929 he was clinical director at Letchworth Village, Thiells, and for the next five years was assistant director of the New York State Psychiatric Institute and Hospital. Since 1934 he has been attending psychiatrist at the Neurological Institute and consulting psychiatrist at Nyack, Englewood and Rockland hospitals. He has been president and secretary of the American Association on Mental Deficiency and is a member of various other special societies.

Society News.—Among speakers at a meeting of the committee on cardiac clinics, New York Heart Association, February 27, will be Drs. Thomas H. McGavack on "Changes in Heart Volume in Addison's Disease and Their Significance"; Paul K. Boyer, "Influence of Digitalis on the Electrolyte and

Water Balance of Heart Muscle," and Henry A. Schroeder, "Relation of the Intake of Salt and Water to the Edema of Heart Failure."——Speakers before the New York Pathological Society on January 25 were Drs. David H. Goldstein and Irving Graef, on "The Influence of Sulfanilamide and Sulfapyridine upon the Evolution of Experimentally Induced Pneumococcus Pneumonia in Rats," and Cornelius P. Rhoads, on "Aplastic Anemia."——Dr. Henry L. Jaffe addressed the New York Roentgen Society, January 15, on "Findings in Cases Generally Misinterpreted as Cortical Bone Abscess or Sclerosing Osteomyelitis of Long Bones."——A symposium on "Experimental and Clinical Phases of Sex Hormone Therapy" was presented before the section of genito-urinary surgery of the New York Academy of Medicine, January 17, by Drs. James F. McCahey, Philadelphia; Walter M. Kearns, Milwaukee, and Norris J. Heckel, Chicago.——Dr. Aaron S. Blumgarten addressed the New York Endocrinological Society, January 24, on "Critical Evaluation of Modern Hormone Therapy."——A symposium on operative treatment of lesions of the chest was presented before the New York Surgical Society on January 24 by Drs. Harold Neuhof, Arthur S. W. Touroff, Arthur H. Aufses, William De W. Andrus and George J. Heuer.

OHIO

Portrait of Dr. Todd.—A portrait of the late Dr. T. Wingate Todd, professor of anatomy at Western Reserve University School of Medicine, Cleveland, was recently presented to the library of the department of anatomy by the Charles Bolton Fund. Birdsill Holly Broadbent, D.D.S., director of the fund, made the presentation on Dr. Todd's birthday, January 15, and President Winfred C. Leutner, LL.D., accepted it. The portrait was painted by Dr. Erich von Baeyer, fellow in roentgenology at University Hospitals.

University News.—The John and Mary R. Markle Foundation has made a grant of $6,000 to Western Reserve University School of Medicine, Cleveland, to support the research of Dr. Claude S. Beck, associate professor of surgery, on methods of revascularizing the heart after coronary obstruction. The National Research Council made a grant of $1,250 for a study of human ovulation under the direction of William W. Greulich, Ph.D., professor of physical anthropology and anatomy and director of the Brush Foundation.

New Dean at Cincinnati.—Dr. Stanley E. Dorst, associate professor of medicine and assistant dean of the University of Cincinnati College of Medicine since 1937, has been appointed dean to succeed the late Dr. Alfred Friedlander. He has been acting dean since the death of Dr. Friedlander in May 1939. The new appointment carries with it the positions of chief of staff of the Cincinnati General Hospital and director of the Christian R. Holmes Hospital. Dr. Dorst graduated at Cincinnati in 1923 and became a member of the faculty in 1926.

Personal.—Dr. Clyde L. Smith, Fremont, has been named city health commissioner to succeed Dr. Edgar L. Vermilya, who had served thirty-one years.——Dr. William F. Lyons, Coshocton, was recently appointed city health commissioner to succeed Dr. Jacob D. Lower.——Dr. Joyce I. Hartman has resigned as supervisor of medical inspection in Cleveland schools to devote his time to private practice.——Dr. Carle W. Beane, West Manchester, has been appointed health officer of Preble County to succeed Dr. James I. Nisbet, Eaton, resigned.

Ohio State Annual Assembly.—The Seventh Post-Collegiate Assembly of the Ohio State University College of Medicine, Columbus, will be held March 29-30. Symposiums and round table discussions will be held all day March 29 and a program with guest speakers Saturday morning March 30. At noon there will be an alumni reunion luncheon in honor of the new president of the university, Howard L. Bevis, S.J.D. The guest speakers will be:

Dr. Robert M. Zollinger, Boston, Surgical Problems of the Gallbladder and Extrahepatic Bile Ducts.
Dr. Lee C. Gatewood, Chicago, Indications for Surgical Intervention in Peptic Ulcer from the Standpoint of the Internist.
Dr. George E. Rockwell, Cincinnati, Active Immunization to Tetanus by Means of Tetanus Toxoid.
Dr. Roll H. Markwith, Columbus, Survey of Ohio Public Health Situation.
Dr. John H. Warvel, Indianapolis, Protamine and Other Slow Acting Insulins and Their Clinical Application.
Dr. Charles W. Mueller, Brooklyn, Diagnosis and Treatment of Placenta Praevia.

Dr. John H. J. Upham, dean of the college of medicine, will present "An Interpretation of Current Research at Ohio State University."

PENNSYLVANIA

Personal.—Dr. Carlisle E. McKee, Pittsburgh, was elected president of the Jefferson Medical Alumni Association at the annual business meeting in Philadelphia, February 8.——Dr. Norman A. Timmins, Bedford, has been named medical director of Bedford County, succeeding Dr. Edward A. Shields.——Dr. Earl H. Grim, Middleton, has been appointed coroner of Dauphin County to succeed Dr. Howard E. Milliken, who resigned to become mayor of Harrisburg.

Society News.—Drs. James M. Henninger and Harold L. Mitchell, Pittsburgh, addressed the Westmoreland County Medical Society at the Mountain View Hotel near Greensburg, February 6, on "The Psychiatrist and Crime with Special Reference to Medical Problems of Delinquency" and "Virus Infections of the Central and Peripheral Nervous System" respectively.——Dr. Norman C. Ochsenhirt, Pittsburgh, addressed a joint meeting of the Fayette County medical and dental societies in Uniontown, February 1, on "Tumors of the Jaw."

Philadelphia

Hospital News.—The Jewish Hospital has opened a department of endocrinology with Dr. Nathan Einhorn as chief and Dr. Leonard G. Rowntree as consultant.

Potter Memorial Lecture.—Dr. Irvin Abell, Louisville, Ky., delivered the William Potter Memorial Lecture at Jefferson Medical College, February 14. His subject was "The Spirit of Medicine."

Society News.—Dr. Marvin Pierce Rucker, Richmond, Va., addressed the Obstetrical Society of Philadelphia, February 1, on "Toxemias of Pregnancy."——Dr. Tom Douglas Spies, Cincinnati, delivered the forty-sixth Mary Scott Newbold Lecture of the College of Physicians of Philadelphia, February 7, on "The Vitamin B Deficiencies."——Dr. Edward B. Krumbhaar addressed the Pathological Society of Philadelphia, February 8, on "The Present Status of Hodgkin's Disease" and Dr. George C. Griffith presented a case of Hodgkin's disease with cardiac involvement.

SOUTH DAKOTA

Personal.—Dr. Antony Triolo, Rapid City, has been appointed director of the division of maternal and child health in the state health department.——Dr. George H. Stidworthy, Deerfield, was honored at a community banquet recently in recognition of his forty years of service.

TEXAS

Twelfth Clinical Conference in Dallas.—The twelfth annual spring clinical conference of the Dallas Southern Clinical Society will be held at the Hotel Adolphus, Dallas, March 11-14. The guest speakers, who will deliver several addresses each, will be:

Dr. Marion A. Blankenhorn, professor of medicine, University of Cincinnati College of Medicine.
Dr. Chester S. Keefer, Wade professor of medicine, Boston University School of Medicine.
Dr. Warren H. Cole, professor of surgery, University of Illinois College of Medicine, Chicago.
Dr. Clay Ray Murray, associate professor of surgery, Columbia University College of Physicians and Surgeons, New York.
Dr. Tracy B. Mallory, assistant professor of pathology, Harvard Medical School, Boston.
Dr. John W. Harris, professor of obstetrics and gynecology, University of Wisconsin Medical School, Madison.
Dr. Frank E. Adair, associate professor of clinical surgery, Cornell University Medical College, New York.
Dr. Walter A. Fansler, clinical associate professor of surgery, University of Minnesota Medical School, Minneapolis.
Dr. Frank E. Stevenson, associate professor of pediatrics, University of Cincinnati College of Medicine.
Dr. Meredith F. Campbell, professor of urology, New York University College of Medicine.
Dr. Parker Heath, professor of ophthalmology, Wayne University College of Medicine, Detroit.
Dr. Millard F. Arbuckle, assistant professor of clinical otolaryngology, Washington University School of Medicine, St. Louis.

WISCONSIN

Personal.—Dr. Michael Kasak, acting medical director of the Milwaukee County Asylum for Chronic Insane and the Milwaukee County Hospital for Mental Diseases, was made medical director, January 24. Dr. Kasak was clinical director from 1925 until the resignation of Dr. Albert F. Young, medical director and superintendent, in January 1939 and since that time has been acting head of the two institutions.

Society News.—Dr. Loyal Davis, Chicago, addressed the Medical Society of Milwaukee County, January 12, on neurologic surgery.——Dr. John A. Bigler, Highland Park, Ill., addressed the University of Wisconsin Medical Society, Madison, January 12, on "Scarlet Fever, the Dick Test and Hemolytic Streptococcus Throat Cultures."——Dr. Matthew N. Federspiel, Milwaukee, addressed the Brown-Kewaunee-Door Counties Medical Society in Green Bay, January 11, on "Fractures and Mutilations of the Face."——Dr. Harold E. Marsh, Madison, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society, Rice Lake, January 2, on "Cardiac Arrhythmia."——At the annual meeting of the Milwaukee Society of Clinical Surgery, January 30, the speakers were Drs. Karl Schlaepfer, retiring president, on "Short Wave in Surgery"; Lemuel D. Smith, incoming president, "The Mechanics of Fracture," and Stanley J. Seeger, "Treatment of Burns."——The Wisconsin Tuberculosis Society was recently organized with Dr. William H. Oatway Jr., Madison, as president and Arthur A. Pleyte, Milwaukee, as secretary. The first meeting was held on January 24 in Madison.

GENERAL

Annual Meeting of Nutrition Institute.—The American Institute of Nutrition will meet in New Orleans, March 13, at the Jung Hotel. Papers on current research in nutrition will be presented at meetings during the day and a symposium on "Nutrition for the Higher Health" will form the program for an evening meeting. Henry C. Sherman, Ph.D., New York, president of the institute, will preside at the symposium and the speakers will be:

Elmer V. McCollum, Ph.D., Baltimore, The Problem of Promoting Better Nutrition.
Dr. John B. Youmans, Nashville, Tenn., The Assessment of the Nutrition of Populations.
Dr. Tom Douglas Spies, Cincinnati, Pellagra and Associated Deficiency Diseases as a Medical and Public Health Problem.
Hazel K. Stiebeling, Ph.D., Washington, D. C., Dietary Levels in the United States.

Southeastern Surgeons to Meet.—The eleventh annual assembly of the Southeastern Surgical Congress will be held at the Tutwiler Hotel, Birmingham, Ala., March 11-13. Among the speakers will be:

Dr. James K. McGregor, Hamilton, Ont., Dysfunction of the Thyroid Gland as a Cause for Premature Old Age.
Dr. Kenneth K. Sherwood, Seattle, Classification and Treatment of Chronic Arthritis.
Dr. Louis A. Buie, Rochester, Minn., Management of Anal Fistulas in Office and Hospital.
Dr. George M. Curtis, Columbus, Ohio, The Rationale of Splenectomy in the Treatment of Certain Anemias.
Dr. Stuart W. Harrington, Rochester, Minn., Surgical Treatment for Calcified Constricting Pericardium.
Dr. Roy D. McClure, Detroit, Modern Treatment of Burns.
Dr. George T. Pack, New York, Diagnosis and Treatment of Malignant Tumors of the Skin.
Dr. Edwin G. Ramsdell, New York, Prevention of Wound Disruption.
Dr. Roy B. Henline, New York, Prostatic Disease, with Special Reference to the Various Causes and Types as Well as Their Treatment.
Dr. Robert H. Herbst, Chicago, subject to be announced.
Dr. Stanley J. Seeger, Milwaukee, Pediatric Surgical Problems.

Dr. James M. Mason, Birmingham, will deliver the C. Jeff Miller Memorial Lecture.

"Foundation Prize" in Obstetrics and Gynecology.—Announcement is made of the annual "Foundation Prize" of $150 to be awarded by the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. Eligible contestants shall include only (*a*) interns, residents or graduate students in obstetrics, gynecology or abdominal surgery, and (*b*) physicians (with an M.D. degree) who are actively practicing these specialties. Manuscripts must be presented to the secretary of the association before June 1 under a nom de plume together with a sealed envelop bearing the nom de plume and containing the name and address of the contestant. Manuscripts must be limited to 5,000 words and must be typewritten in double spacing on one side of the sheet. Ample margins should be provided. Illustrations should be limited to such as are required for a clear exposition of the thesis. Three copies of the thesis and the illustrations are to be submitted. The successful thesis will become the property of the association, but this provision does not interfere with publication in the journal of the author's choice. The award will be made at the annual meetings of the association, at which time the successful contestant must appear in person to present his contribution as a part of the regular scientific program, in conformity with the rules of the association and he must meet all expenses incident to the presentation. The secretary is Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va.

Government Services

Activities of Veterans' Administration

During the fiscal year ended June 30, 1939, there were 165,576 admissions of United States veterans to hospitals and a daily average of 49,147 patients of all types under treatment, according to the annual report of the Administrator of Veterans' Affairs.

The hospital load at the end of the year was 54,117, an increase of about 6 per cent over the preceding year. More than 77 per cent of these veterans were receiving treatment for disabilities not of service origin. Of the total patient load, 48,527 patients were World War veterans. More than 64 per cent were in hospitals in their home states.

According to types of illness they were divided as follows: tuberculosis 9.2 per cent, neuropsychiatric diseases 57.68 per cent, general medical and surgical conditions 33.12 per cent. This distribution is in marked contrast to that of 1923, when 41 per cent were ill of tuberculosis, 39 of neuropsychiatric diseases and 20 of general medical and surgical conditions.

The number of admissions for 1939 was the highest for any fiscal year to date, the administrator reported, and more than 92 per cent were for non-service connected disabilities. Admissions by types of diseases were as follows: pulmonary tuberculosis 11,268, mental diseases 9,372, other neurologic disorders 13,240, and general medical and surgical diseases 131,696.

There were 221,509 patients under hospitalization during the year, an increase of 10 per cent over 1938. Of these 218,621 were United States veterans; the remainder included 1,689 members of the Civilian Conservation Corps and Works Progress Administration, 202 veterans of countries allied with the United States in the World War and 741 miscellaneous beneficiaries.

Of the veterans, 164,760 were discharged after an average of 72.4 inpatient days. About 78 per cent of them had been under treatment for general medical and surgical conditions, 15 per cent for neuropsychiatric diseases and 7 per cent for pulmonary tuberculosis. There were 10,880 deaths, including 7,365 among patients under treatment for general conditions, 1,947 for tuberculosis and 1,568 for neuropsychiatric diseases. About 37 per cent were caused by diseases of the circulatory system, including organic heart disease, and approximately 34 per cent by malignant tumors and diseases of the digestive system.

Veterans present in domiciliary status under control and jurisdiction of the Veterans' Administration totaled 15,426, an increase of 1,172 over the preceding year. General medical and surgical conditions accounted for the disabilities of 10,644 of those under domiciliary care, neuropsychiatric diseases for 4,461 and tuberculosis 321.

At the end of the fiscal year the Veterans' Administration was operating hospital facilities at eighty-four locations in forty-five states and the District of Columbia, with a capacity of 54,779 beds, an increase of 2,788 over 1938. In addition the administration was using 2,748 beds in other government hospitals. There were 16,345 beds set aside for domiciliary care. Construction in progress at the time of the report was to add 9,710 beds, and two other projects providing 206 beds were completed in June, though the beds were not available until after the end of the fiscal year, according to the report. New construction for which funds were available but which had not been placed under contract by June 30 was to provide 1,127 hospital and 465 domiciliary beds. During the twenty years since the first law was passed in 1919, a total of $200,044,766 has been made available for construction of facilities for veterans.

The net operating expense for all facilities for 1939 was $53,205,919.47. The per diem cost of operation was $2.68 for all types of cases. For tuberculosis the cost was $3.97, for general conditions, $3.59 and for neuropsychiatric diseases $1.90.

The administration made a total of 1,127,162 physical examinations for outpatient purposes and furnished 1,079,663 outpatient treatments. Two per cent of the examinations and 9 per cent of the treatments were dental.

The report points out that the administration gives continuous study to introduction of new diagnostic and treatment methods, to renovation or replacement of unserviceable equipment and to the training of personnel. Two special units are considered of particular importance: the cardiovascular unit at the Diagnostic Center in Washington, D. C., and the tumor research unit at Hines, Ill., both of which are conducting important research.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 20, 1940.

Medical Students to Return to London

Most of the London medical schools which were evacuated when war began are bringing back as many students as possible. The minister of health has decided that he can no longer pay for the board and lodging of students who have been attached as dressers to the hospitals prepared around London for the reception of casualties which have not materialized as was expected. But later on if the students should be required to assist in the treatment of casualties he may again pay for their board and lodging. The number who return to London depends on how many can be satisfactorily taught with the number of hospital beds now available in London. The London teaching hospitals are still compelled to reserve one third of their beds for possible civilian casualties, and in some the remaining hospitals beds will not be adequate for the clinical teaching of the students. On the other hand, in most cases the education of students billeted at the hospitals in the country suffers. The arrangements for such teaching have been organized for generations at the medical schools of the London hospitals and cannot be reproduced in the country hospitals temporarily organized for the treatment of the casualties of air raids.

The Control of Puerperal Sepsis

The Ministry of Health has issued a memorandum on the control of puerperal fever because the increased knowledge gained during recent years provides a firmer basis for action than has been available heretofore. Yet this knowledge is not being fully applied. It has been shown that the most dangerous puerperal infection—that by hemolytic streptococci—is rarely if ever due to latent infection of the vagina before parturition. It is brought from outside sources at the time of confinement or soon after. The streptococci which give rise to puerperal fever belong to the same group as those responsible for scarlet fever, tonsillitis, adenitis, otitis media and cellulitis. Their chief habitat is the human upper air passages and thence through a variety of agencies—fingers, instruments and possibly air—puerperal infection is derived. The risk of infection with the most dangerous strains can be largely removed by elimination from the environment of all persons with inflammatory conditions of the upper air passages caused by or favoring multiplication of hemolytic streptococci. The application of this knowledge may be considered from two points of view: (1) in the absence of puerperal pyrexia; (2) on the occurrence of puerperal pyrexia.

1. In the absence of puerperal pyrexia, swabbing of the midwife in attendance should not be done, unless she shows signs of an acute or chronic inflammatory condition of the tonsils, pharynx, nose or middle ear. Every midwife should be instructed to report any symptom of such a condition at once, whereupon she should be suspended from duty and swabs should be taken for bacteriologic examination. In the event of obtaining a positive swab there may be some doubt whether the hemolytic streptococci found are responsible for the clinical condition or are merely temporary invaders. The distinction is important, as they are more dangerous when they are responsible; but there is no known bacteriologic method of making this distinction: the number of colonies is no criterion of the presence or absence of an infective process. Therefore every midwife who has reported nasopharyngeal symptoms and has been found to be a carrier of hemolytic streptococci should be suspended. If the streptococci belong to group A she must not resume duty until she has recovered completely and three negative swabs at daily intervals have been obtained. Pupil midwives should be examined and those who have a chronic infection of the tonsils or sinuses with hemolytic streptococci should be advised that it is likely to prevent them from practicing midwifery.

2. On the occurrence of puerperal pyrexia, steps should be at once taken to ascertain its cause and until genital infection with hemolytic streptococci has been excluded the attendants must not conduct a labor or nurse any other puerperal woman. It has been shown that whenever there is a streptococcic infection of the body of the uterus the organisms will be present in the vagina. If the infection is limited to the vagina or perineum (it very rarely is) nothing is to be gained, but the contrary, by passing a swab into the cervix. Therefore a vaginal swab should be taken in every case of puerperal pyrexia unless the physician can be sure that the fever is not due to infection of the genital tract. This involves examination of a large number of swabs, many of which will not yield hemolytic streptococci. Nevertheless bacteriologic examination of a vaginal swab can rarely be omitted with safety. If it yields hemolytic streptococci, an attempt should be made to ascertain whether any of the attendants are a possible source of infection. Swabs should be taken from the nose and throat and from any cutaneous lesion of the physician or midwife. But, if streptococcic infection of the patient is suspected from the outset, swabs from the attendants should be sent for examination at the same time as the vaginal swab. If any attendants are found to harbor hemolytic streptococci they must cease to attend labors or to nurse other puerperal women until three negative swabs, taken at daily intervals from both the nose and the throat, have been obtained and clinical signs, if any, have disappeared.

PARIS

(From Our Regular Correspondent)

Jan. 13, 1940.

Prophylaxis Against Bubonic Plague

Samoïlowitz, during an epidemic in Russia in 1778, observed that those who had been stricken but survived seemed immunized. He sought, like Jenner, to inoculate the pus of buboes containing an attenuated virus. Similar inoculations were safely made in other cases. In 1891 Yersin was able to isolate the bacillus. By repeated punctures he obtained a culture stock which immunized nine tenths of the rats on experimentation. He even inoculated himself, but the epidemic which he had observed in Hong Kong terminated spontaneously. It was Strong in Manila who in 1906 first practiced systematic preventive inoculation. At present the plague is endemic in several countries, notably Madagascar, where from 3,000 to 4,000 cases occur annually.

Yves Gérard in a recent paper described the conditions under which he combated plague in Madagascar. His vaccine was prepared chiefly from an E. V. stock cultured by monthly transplantations since 1926. Thereby an attenuation of the virus was brought about. The injections induced perfect immunization in animals about the tenth day, lasting for nine months. In man the vaccination was performed by the injection of 0.2 cc. of a culture emulsion after a forty-eight hour refrigeration. It induced splenic reactions which indicated immunization. At first, lepers in the advanced stage of the disease and volunteer physicians and male nurses were inoculated, without the least accident, and then the inhabitants of endangered villages. The original doses were increased without any grave incidents. In the district of Emyrne 46,879 natives were thus vaccinated; 60,000 served as controls. In the first group, mortality from plague was 0.47 per thousand and the general mortality 4.8. In the control group mortality was 1.66 per thousand and the general mortality 9.7, twice greater. During the three years 1935-1937, 791,160 inhabitants of the high plateaus were inoculated. Mortality was reduced

from 3,493 in 1933-1934 to 596 in 1937-1938, an 80 per cent reduction. Mortality could probably be reduced still more, he said, by intensifying vaccine concentrations. In Java, where Kolle's bacterial vaccine was used, mortality was reduced only 50 per cent. Apparently the E. V. Madagascar stock is superior to the Tsiwidej Java stock for purposes of inoculation.

Osteopathies Due to Vitamin C Deficiency

According to Policard and Leriche, bone regeneration in fractures begins with a decalcification stage, followed by calcium precipitation essential to calcium formation. These calcium localizations are related perhaps in a causal way to a circulatory activity at the bone level. However, causal relationship cannot be asserted. Microscopic observations, for example, show an extreme tissue congestion at points level with the epiphyses or metaphyses during the decalcified phase, but it cannot be determined whether this congestion is active or passive. On the other hand, in secondary lime precipitations observed in the periphery of the bone, or in the para-osseous mesodermal tissues, the periosteal tissues are the seat of hemorrhagic edemas that indicate circulatory slowing and stagnation apparently favorable to the secondary process of peripheral recalcification.

G. Mouriquand and V. Edel, in the course of investigations made especially by means of x-ray examinations, the results of which they reported to the Academy of Medicine, sought to determine to what extent calcium metabolism was modified under acute, subacute or chronic conditions of vitamin C deficiency. They observed that about the fifteenth day the epiphysial and metaphysial areas first become decalcified and then softened. In acute or subacute cases this reabsorption of calcium was not accompanied with any change, no calcium being carried to the periphery. In chronic states, on the contrary, induced by the addition of 0.5 mg. of ascorbic acid (either synthetic or lemon juice) hypertrophic and often osteophytic calcium deposits were observed about the seventieth day and in all cases before the one hundred and twentieth day, accompanied with ankylosis of the posterior portion.

Mouriquand and Edel think that a certain lapse of time is necessary for the transfer of calcium from the central bone regions to the periphery. Whether the calcium reabsorbed during the time preceding the transfer remains in the bone tissue in a transitional state or is eliminated by the feces or urine, making room for other extra-osseous calcium supplies, raises questions more easily asked than answered, though observed experimentally and radiographically. Since vitamin C deficiency, like vitamin D deficiency, is a factor in decalcification, the regimen in bone fractures must be adjusted to prevent it.

BERLIN

(From Our Regular Correspondent)

Jan. 3, 1940.

Further War Measures

The premature granting of medical appointments because of the dearth of physicians in the absence of the state medical examination does not *ipso facto* confer the degree of doctor of medicine, even if an acceptable dissertation has been submitted. It is ordered that doctoral examinations be postponed until the required medical education has been completed and the required training service has been made up. The salary of these students of medicine, prematurely and exceptionally approved and assigned to sick fund service, is to be placed on a footing fundamentally equal with that of physicians previously appointed. It is therefore permissible to appoint them at once as assistants in hospitals where vacancies exist.

The identification tag that every soldier in the German army must wear around his neck will henceforth indicate the blood group to which he belongs.

In accordance with regulations requiring economy in filling out prescriptions containing fats, alcohols and similar substances of value for war purposes, fats of all kinds may now be prescribed only under the most stringent need. Soap may be prescribed only in quantities indispensably necessary to promote recovery. The prescription of medicines rich in sugar, such as cough syrups, should be carefully checked. The cultivation of medicinal plants in the vegetable gardens of the hospitals of Berlin has continually been increased. In 1938, 4,440 square meters of land was planted with camomile, 4,015 with peppermint, 1,540 with sage, 7,984 with valerian, 2,300 with primrose, 500 with lilies of the valley. Iodine and its derivatives may be sold in drug stores only on medical prescription.

Vitamin Needs of the Navy

Two navy physicians, Drs. Stutz and Weispfennig, report in *Der deutsche Militärarzt* investigations on the vitamin needs of sailors made at the Baltic Sea marine station. They were unable generally to confirm the observations made by others that 50 mg. of ascorbic acid is insufficient for daily needs under conditions existing on board ship. This amount of vitamin C is sufficient for conditions on land when physical exertion is moderate. The authors found that a combination of vitamin C and B_1 was superior to the sole use of vitamin C. The most favorable results were obtained by the use of lemons. A distinct superiority of natural vitamins over artificial products was noted. Environmental factors, such as sun irradiation, play an important part in vitamin metabolism. They recommend provisionally a combined use of vitamin C and B_1 for men at sea. The utilization of high grade lemon extract is, according to the authors, very limited on board ship. Germany does not import such large quantities of lemons as would be required nor would there be room enough on board ship for the barrels of lemon extract needed. The authors recommend a haw marmelade to be made at 176 F. with oxygen control and to be consumed on bread.

Control of Rickets

The minister of the interior has directed all governmental health bureaus to summon all mothers of infants from 3 to 12 months of age for a medical examination in connection with measures designed to combat rickets. If signs of rickets are noted, the mother receives a bottle of irradiated ergosterol with instructions to add five drops daily to the food. The bottle contains a supply for about two months. The child is then reexamined and additional medicine given. If after a third examination symptoms of rickets are still present, the child is assigned to the supervision of a physician. If the mother is unable to pay for the service, social security provisions and, if necessary, the public welfare program of the national socialist party guarantee the expense. No parents are exempt from the regulations requiring infant examination. These measures represent a new kind of prophylaxis on a large scale, similar to that governing the vaccination of a populace. It is estimated that about 1,500,000 infants will be subject to the first examination. These general tests will enable the government also to determine the actual spread of rickets. Heretofore the local statistics available have been so conflicting that no general conclusions could be drawn from them.

Increased Consumption of Alcohol in Germany

According to the most recent statistics the production of beer, which increased in the fiscal year of 1937-1938 9.3 per cent (3.7 million hectoliters) showed a still greater increase in the fiscal year of 1938-1939, namely 10.3 per cent (4.51 million hectoliters). The total of 48.11 million hectoliters represents an increase of about 43 per cent over the low totals for 1932-1933. Simultaneously the consumption of alcohol increased to a still greater degree. In the first quarter of the year 1939-1940 there was noted a still further enhancement of beer consumption in Germany.

BELGIUM

(From Our Regular Correspondent)

Jan. 4, 1940.

Use of the Radioscope in the Army

Toussaint discussed the systematic use of radioscopy of the lung in freshly mobilized recruits before the Belgian society of radiologists. Since roentgenography could not be considered for economic reasons, radioscopy might prove immensely serviceable in detecting pulmonary tuberculosis, at present amounting to 1 per cent of the fighting forces. Otherwise lesions would tend to spread and increase under the strain of exercise and fatigue and increase the drain on the national treasury. The systematic use of the radioscope required: 1. Medical personnel consisting of four radioscopists chosen after their eyesight had been tested. They would not be radiologists but internists specially trained for examinations of this kind. 2. Proper equipment consisting of a movable x-ray apparatus, suitably protected. In order to avoid delays, adequately lighted gangways would facilitate the passing of the men behind the screen. 3. A smoothly functioning organization that did not interfere with military activities. Under the conditions mentioned, about 100 men could be examined in one hour.

Diphtheria Control in the Schools

Perkowsky, speaking before the Belgian association of social medicine, pointed out that diphtheria cases were still numerous. The speaker discussed the procedures in use to prevent diphtheria, such as the closing of schools, inoculation, detection of germ carriers and isolation of those infected. These measures, he said, have proved insufficient. The detection of germ carriers took too much time and in epidemics the results of the examination of specimens ran the risk of being too late to permit an effective prophylaxis. While declaring himself in favor of inoculations thoroughly and extensively performed, Perkowsky proposed regular daily examinations in school centers in time of epidemics. These examinations, conducted by school physicians, required no complex organization and permitted serum injections at once, on the least suspicion. Serum injections, promptly administered and in sufficient quantities, he said, were efficacious in all cases.

Hospitalization of Indigent Tuberculous Patients

In the report of the minister of public health, figures are given indicating the ravages of tuberculosis since the World War. The increase before and after the war can be noted from the following comparison: If 100 is taken to represent the number of deaths per hundred thousand in 1913, the mortality in 1918 for the different countries was 109 for France, 144 for England, 164 for the Netherlands, 154 for Germany and 208 for Belgium. Although good reasons exist for believing that Belgium will not again suffer a debilitation period like that of 1914-1918, the public health department is considering a plan that aims at the isolation of tuberculous patients in sanatoriums. At present these institutions receive three kinds of patients: those who pay for their services, social insurance beneficiaries and the indigent. Numerous communes, however, do not have the resources to care for indigent patients in a sanatorium. The health department plans to meet the needs of the third class. Provincial communal funds have been created entrusted with the hospitalization of tuberculous and carcinomatous persons. To extend their activities, that is to double the number of those hospitalized, it is estimated that 16,000,000 francs will be needed annually.

Diseases of Workers in Cotton Factories

Before the Belgian association of social medicine, Thiry set forth the results of an inquiry begun last year in which about 310 workers in cotton mills were examined. His attention in this inquiry was directed: 1. To the considerable incidence, at every age level, of enlarged lymph glands, chiefly in the neck and axillae. 2. To the extremely numerous cases in young persons of abnormal modification of the blood pressure. Hypotension was exceptional, hypertension common and at times high. In certain cases hypertension could be attributed to pulmonary sclerosis, which affects numerous cotton mill workers. However, hypertension could not thus be accounted for in youthful workers presenting no pulmonary lesions that might affect the circulation. 3. To modification in the sedimentation rate.

International Union Against Venereal Diseases

The "Union internationale contre le péril vénérien," founded by Professor Bayet in 1922, held its annual meeting in Liége, June 24-28, 1939. The following resolutions and recommendations were passed and copies sent to all governments which have representatives in the union: 1. Antivenereal dispensaries should make available to their patients the new resources of antigonococcus chemotherapy in conjunction with the gynecologic services rendered to women affected with gonorrhea. 2. Sulfanilamides intended for the internal chemotherapeutic treatment of gonorrhea should be delivered only on a nonrenewable medical prescription. The union went on record requesting that the governments make arrangements with the military authorities that no special measures, such as penalties and prolongations of the time of service, be resorted to when soldiers were known to have venereal disease, since such measures resulted in withdrawing a great number of infected from medical examinations and treatments.

Trends in Cardiology

According to Dautrebande, who discussed the present tendencies and evolution of cardiology before the Belgian cardiologists (Journées Belges de Cardiologie), cardiology is more and more taking its orientation from physiology. Too much importance, attached for a long time to clinical symptoms, kept the cardiologists from studying the problems of cardiac function. At the source of this function is found the cardiac output. This permits early diagnosis of heart failure long before clinical studies have been made. However, of greater interest to cardiologists than the heart is the periphery of the heart. The speaker pointed out the significance of tests that estimate the strength of oxygen administration. The problem consisted here in maintaining the tissues and especially the myocardium under conditions of normal oxygenation. He demonstrated the value of oxygen for the circulation by showing its effects in hypertension produced by renal ischemia.

Marriages

JOHN STAIGE DAVIS JR., New York, to Miss Florence Roome at East Williston, N. Y., Dec. 9, 1939.

LAMBERTUS E. BEEUWKES to Miss Hilda G. Smith, both of Dearborn, Mich., in December 1939.

IVAN WILLARD BROWN JR., Newfane, N. Y., to Miss Madeline Davis at New York, Dec. 28, 1939.

JOHN S. BEASLEY, Centerville, Tenn., to Miss Allie Brown Regeon at Franklin, Dec. 14, 1939.

BURNETT B. FORMAN, Indianapolis, to Miss Margaret Nelson, of Union, Wash., Sept. 14, 1939.

JEFF N. WEBB, Seneca, S. C., to Miss Willie Sue Boleman, of Townville, Dec. 29, 1939.

ANDREW MUNTYAN, Detroit, to Miss Mary Chargo at Bowling Green, Ky., February 1.

CLARENCE B. SACHER to Miss Rose Mary Hargrave, both of Dallas, Texas, Dec. 1, 1939.

ELWYN S. SHONYO, Elgin, Ill., to Miss La Von Abraham, of Chicago, January 13.

GEORGE RENNER JR., Cincinnati, to Miss Naomi Butler in January.

Deaths

Harry Milton Weed ✠ Buffalo; University of Buffalo School of Medicine, 1903; professor of ophthalmology emeritus at his alma mater; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; ophthalmologist to the Buffalo General, Millard Fillmore, Children's, St. Mary's Maternity, Erie County, and Buffalo City hospitals, Buffalo, and Moses Taylor Hospital, Lackawanna; served during the World War; aged 65; died, Dec. 5, 1939, of coronary occlusion.

John Grant Quimby, Lakeport, N. H.; Medical School of Maine, Portland, 1888; at various times member of the house of representatives and state senate; for many years member of the board of education and chairman of the board of health; chairman of the board of trustees of the Laconia (N. H.) State School; aged 77; died, Dec. 12, 1939, of cerebral hemorrhage.

Frederick Henry Thompson, Fitchburg, Mass.; Harvard Medical School, Boston, 1870; member of the Massachusetts Medical Society; member of the House of Delegates of the American Medical Association in 1911-1912; for many years on the staff of the Burbank Hospital; aged 95; died, Dec. 14, 1939, of arteriosclerosis.

William McIlwain, Detroit; University Medical College of Kansas City, Mo., 1898; in 1929 was awarded the Distinguished Service Cross by the War Department for gallantry in action while serving with the "Lost Battalion" during the World War in France; aged 81; died, Nov. 28, 1939, of cerebral arteriosclerosis.

Oscar Emanuel Grant ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; fellow of the American College of Surgeons; on the staff of the Swedish Convenant Hospital; aged 60; died, January 4, at Fairhope, Ala., of heart disease.

Thomas A. Moore, Plainview, Texas; Memphis (Tenn.) Hospital Medical College, 1900; at one time health officer of Briscoe County; formerly on the staff of the Wichita Falls (Texas) State Hospital; aged 64; died, Dec. 29, 1939, of chronic myocarditis.

Ortus Fuller Adams, Trinidad, Colo.; Northwestern University Medical School, Chicago, 1901; veteran of the Spanish-American and World wars; formerly county coroner; aged 62; died, January 3, in Mount San Rafael Hospital of hypertension and uremia.

Burton J. Simpson, Chicago; Rush Medical College, Chicago, 1900; member of the Illinois State Medical Society; on the staff of the Englewood Hospital; aged 69; died, January 8, of Parkinson's disease, cerebral arteriosclerosis and pneumonia.

Stewart Slocum ✠ Fortville, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1900; past president of the Hancock County Medical Society; aged 71; died, Dec. 18, 1939, at Van Nuys, Calif., of injuries received in an automobile accident.

Pierce A. Meck, Nanticoke, Pa.; Jefferson Medical College of Philadelphia, 1884; member of the Medical Society of the State of Pennsylvania; formerly president of the board of health and health officer; aged 80; died, Dec. 4, 1939, of senility.

George Augustus Cherry ✠ Flushing, N. Y.; University of the City of New York Medical Department, 1891; formerly on the staffs of the New York Foundling and Bellevue hospitals, New York; aged 69; died, January 17, of heart disease.

Frank Albert Foster, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; at one time coroner and health officer in Charlevoix County, Mich.; aged 81; died, Dec. 23, 1939, of coronary thrombosis.

Peter F. Sheaffer, Christiana, Pa.; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; aged 80; died, Nov. 29, 1939, in the Lancaster (Pa.) General Hospital of uremia.

Herbert William Plummer, Lime Spring, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1905; member of the Iowa State Medical Society; aged 62; died, Dec. 5, 1939, of sarcoma of the lungs.

Frank Reynolds Fleming, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1911; on the staff of the Belmont Hospital; aged 52; died, Dec. 12, 1939, of cerebral hemorrhage and arteriosclerosis.

George Alanson Crittendon, Springfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1908; aged 59; died, Dec. 5, 1939, in the Springfield Hospital of cerebral hemorrhage, arteriosclerosis and chronic nephritis.

Norman Irving Broadwater ✠ Oakland, Md.; University of Maryland School of Medicine, Baltimore, 1909; bank president; aged 57; died, January 3, in the Memorial Hospital at Cumberland of cerebral hemorrhage.

David Merring Milholland, Defiance, Ohio; Miami Medical College, Cincinnati, 1884; member of the Ohio State Medical Association; aged 81; died, Dec. 26, 1939, in a hospital at Toledo of arteriosclerosis.

James McIntire Fleming, Blairs Mills, Pa.; Medico-Chirurgical College of Philadelphia, 1896; aged 70; died, Nov. 8, 1939, in the Lewistown (Pa.) Hospital of cirrhosis of the liver and arteriosclerosis.

Francis B. Warnock, Sioux City, Iowa; State University of Iowa College of Medicine, Iowa City, 1882; member of the Iowa State Medical Society; aged 80; died, Dec. 28, 1939, of coronary thrombosis.

Raymond Evan Bailey, Hamlin, W. Va.; Medical College of Virginia, Richmond, 1927; member of the West Virginia State Medical Association; aged 37; died, January 7, in a hospital at Huntington.

Argolis O. Varner, Union Star, Mo.; Missouri Medical College, St. Louis, 1882; for many years bank president; aged 87; died in December 1939 in St. Joseph of cerebral hemorrhage and arteriosclerosis.

James Nathan Rohrbach, Palm, Pa.; Jefferson Medical College of Philadelphia, 1904; aged 68; died, Dec. 19, 1939, in the Sacred Heart Hospital, Allentown, of pneumonia and paralysis agitans.

William Cowley, Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1886; aged 75; died, Dec. 20, 1939, in Sherman, Conn., of chronic myocarditis, hypertension and thrombosis.

William Franklin Strangways, Little Rock, Ark.; M.B., Trinity Medical College, Toronto, Ont., Canada, in 1876 and M.D. in 1878; aged 83; died, Dec. 30, 1939, of carcinoma of the prostate.

C. Colfax Smith, Clarksville, Iowa; Northwestern University Medical School, Chicago, 1904; member of the Iowa State Medical Society; aged 71; died, Dec. 5, 1939, of coronary sclerosis.

Luella Z. Rummel, Kansas City, Mo.; Hering Medical College, Chicago, 1901; Eclectic Medical University, Kansas City, Mo., 1917; aged 75; died, Dec. 27, 1939, of mitral stenosis.

Willoughby H. Reed, Jeffersonville, Pa.; Jefferson Medical College of Philadelphia, 1882; formerly a druggist; aged 83; died, Dec. 19, 1939, in Deland, Fla., of heart disease.

Fred Lee Johnson, Detroit; Cleveland Homeopathic Medical College, 1903; served during the World War; aged 61; died, January 7, of a self-inflicted bullet wound.

Thomas Jefferson Williams, Bogalusa, La. (licensed in Louisiana in 1925); aged 67; died, Dec. 17, 1939, in New Orleans of acute dilatation of the heart.

Maurice Freiman, New York; University and Bellevue Hospital Medical College, New York, 1908; aged 55; died, Dec. 22, 1939, of cerebral hemorrhage.

Harold Attig Miller, San Francisco; Jefferson Medical College of Philadelphia, 1914; aged 49; died, Nov. 11, 1939, of coronary thrombosis and myocarditis.

Hilmar Munster, Belmont, Calif.; University of Rochester (N.Y.) School of Medicine, 1929; aged 35; was found dead, Dec. 21, 1939, in a hotel at Berkeley.

Luther W. Bowman, McAllen, Texas; State University of Iowa College of Medicine, Iowa City, 1886; aged 80; died, Dec. 29, 1939, of myelogenous leukemia.

Weden M. Tibbitts, Topeka, Kan. (licensed in Kansas in 1901); aged 75; died, Dec. 30, 1939, of hypertension, chronic myocarditis and diabetes mellitus.

Richard S. Starkey, Seattle; Jefferson Medical College of Philadelphia, 1895; aged 73; died in December 1939 of heart disease and gallbladder infection.

John Patterson Hartwell, Elmira, N. Y.; Long Island College Hospital, Brooklyn, 1886; aged 78; died, Dec. 3, 1939, of cerebral hemorrhage.

H. Dudley Young, Los Angeles; Harvard Medical School, Boston, 1895; aged 72; died, Nov. 22, 1939, of prostatism.

Correspondence

PELLAGRA

To the Editor:—I read with keen interest your recent article on pellagra and note that you have given a lot of credit to Goldberger. Have you read the paper by George H. Searcy on "An Epidemic of Acute Pellagra" (*Tr. M. A. State of Alabama,* 1907, p. 387)? His paper is quite enlightening because of its priority. He discussed the symptoms, diagnosis, pathology, prognosis and treatment. He made the statement that "the essential management consists in placing the patient in good hygienic surroundings and trying to improve the general health by good nourishing food and such tonics as may seem indicated" (p. 390). In the discussion that follows the paper Dr. Searcy states that "it might be well for the profession to look out for these diseases, especially among Negroes, who often times have nothing more to eat than corn bread and a little meat." His remarks concerning the nurses' diets and those of the patients are interesting and might have given Goldberger an idea as to his research.

Dr. Searcy died a few years ago; I am writing because of my own interest in seeing that priority is given to his work.

EMMETT B. CARMICHAEL, PH.D., University, Ala.

"BURN SHOCK"

To the Editor:—In their article "Burn Shock," published in the Dec. 16, 1939, issue of THE JOURNAL, Trusler, Egbert and Williams state that they frequently observed low blood sugar values in dogs in which various degrees of burns had been produced experimentally. They further state that they are unable to explain these low values but feel that this point should be considered in the treatment of burn shock.

In an article entitled "Pathogenesis of Death from Burns" (Greenwald, H. M., and Eliasberg, Helene: *Am. J. M. Sc.* **171**:682 [May] 1926) we reported two cases in which children aged 2 and 3 years respectively died of burns. One child was observed to have an entire absence of sugar in the blood and the other child had 30 mg. per hundred cubic centimeters. This was striking in view of the fact that Underhill had just described a series of cases in which an increased concentration of sugar in the blood had been found.

Our observations led us to believe that perhaps there were other factors than just the physicochemical changes of shock responsible for the changes in the blood sugar content. We therefore studied, experimentally, blood sugar levels in burns and the effect of burns on the organs most concerned in the regulation of blood sugar levels, using the rabbit as the experimental animal. We observed that a marked rise in blood sugar values occurred uniformly in all the rabbits within a few hours after the burn; the greatest rise occurred in the rabbits that were most severely burned and that presented the greatest degree of shock. In seven rabbits a marked drop followed the initial rise.

All except one rabbit showed a marked decrease in either muscle or liver glycogen or both. Microscopic examination of the pancreases showed normal glandular structure; the liver, aside from the absence of or a decrease in glycogen, showed no striking changes. The adrenals, however, showed definite changes. In the animals that died within three or four hours after the burn increased cellular activity was found; in those that lived for from twenty-four to forty-eight hours definite degenerative changes were found but were associated practically always with evidence of regeneration.

Since in the initial stage of a severe burn marked hyperactivity of the adrenals was found, we concluded that this was responsible to a great degree for the high blood sugar values noted. The glycogen content of the livers as well as of the muscles was markedly decreased in these rabbits. These facts tended to bear out the assumption that an outpouring of epinephrine into the circulation occurred as a result of the increased secretory function of the adrenal glands. In the later stage the destructive changes in the adrenals were responsible for a decreased amount of epinephrine thrown into the blood stream and thus inhibited the liver in its normal glycogenolytic function, with resulting hypoglycemia.

If one can apply conclusions drawn from experimental burns in animals to burns in man, it can be stated that in the first stage of a severe burn the high blood sugar level observed is due not to blood concentration alone but also to increased adrenal secretion and that the low blood sugar observed at a later stage is in part due to failure of the adrenals.

H. M. GREENWALD, M.D., Brooklyn.

SENSITIVITY TO SOLUTION OF POSTERIOR PITUITARY

To the Editor:—Occasionally during the past few months I have seen communications in THE JOURNAL referring to hypersensitivity to solution of posterior pituitary. This reminds me that in November 1931 I had a case of allergic reaction from the injection of solution of posterior pituitary following the third stage of labor. Apparently the patient almost died and was saved only by the prompt administration of epinephrine.

I reported this case to the manufacturer (Parke, Davis & Co.) and was advised by the chief of the research department (Dr. Kamm) that this was the first instance of which he had ever heard of allergic reaction from solution of posterior pituitary. Later, with the assistance of the American Medical Association library and Dr. Kamm, I reviewed the literature and found four or five cases reported from abroad. I then prepared a brief paper on the subject of hypersensitivity to solution of posterior pituitary and submitted it to THE JOURNAL for publication. It was returned with a notation that, while it was an unusual report, it did not seem to be an occurrence of sufficient interest to warrant publication. It is a source of some satisfaction to me to learn that my observation in 1931 of hypersensitivity to this preparation is now being confirmed by other observers.

J. STREET BREWER, M.D., Roseboro, N. C.

LIPOID PNEUMONIA

To the Editor:—The editorial "Lipoid Pneumonia" (THE JOURNAL, January 20) is timely and forceful, but it falls far short of its potential value by reason of two serious omissions.

Reference to Drs. P. R. Cannon and T. E. Walsh should recall at once "The Problem of Intranasal Medication," published in the *Annals of Otology, Rhinology and Laryngology* in September 1938. In this report was proof that the so-called mild silver proteins argyrol and neosilvol provoke pulmonary tissue reaction with consequent damage to lung tissue similar to that produced by liquid petrolatum. These products are still in common, although diminishing, use by the profession and public alike.

Also, having pointed to the wrong road, had you indicated the right one you would have added utility to enlightenment. Thus, the same investigators demonstrated that isotonic saline solutions of ephedrine and related vasoconstrictors caused no reaction in pulmonary tissue. This coincides with previous studies on their relation to nasal and sinal epithelium. The investigators, therefore, advocate these solutions as the medications of choice for local nasal treatment.

The modern trend is toward a physiologic approach to rhinologic problems. This is a sound but revolutionary change in a specialty that has lagged behind all others in clinging to empiricism. The evidence produced by Laughlen, and more recently

by Walsh and Cannon, shows clearly the dangers of empiricism. For a generation nostrums of little use and much harm have been prescribed and widely used. Not only has the practice been unscientific and harmful, it has evidenced a notable lack of curiosity in a speciality in which ingenuity has been notably abundant.

My feeling is that failure to make correction will not be missed by the manufacturers of the "mild silver" nostrums whose advertising is always with us.

S. N. PARKINSON, M.D., Oakland, Calif.

GERIATRICS AND DIET

To the Editor:—In the article by Dr. E. I. Tuohy in THE JOURNAL January 20 entitled "Geriatrics in Relation to an Adequate Energy Producing and Protective Diet," there are two points that call for comment. These two corrections, one major and one minor, in no way detract from the general excellence of the article, which stresses matters in the diet of older persons for which the physician may unwittingly have been at fault, limiting more and more of the diet until there is less and less of the patient to eat it.

In referring to the word geriatrics, Dr. Tuohy says that "Masters introduced it in a thesis in 1914. . . ." Dr. I. L. Nascher was the author of a large textbook, "Geriatrics," published in 1914, at which time the name came into some general usage. However, in a letter received from Dr. Nascher in July 1938 there is the following (with the permission of Dr. F. R. Packard): "The name was not coined in 1914 but in a paper published in the *New York State Medical Journal,* Aug. 21, 1909. I gave a talk on geriatrics before the New York County Medical Society in 1910 and 1911; lectured on geriatrics at Bennett Medical College, Chicago, now Loyola University School of Medicine, in 1911 and 1912, and at Fordham Medical College, 1913-1914." For the sake of accuracy and to settle the point of priority, this excerpt of Dr. Nascher's letter should be sufficient.

The second point has to do with a quotation from my paper entitled "History of Geriatrics (*Ann. M. Hist.* **10**:324 [July] 1938). The point is minor, but because the meaning has been changed slightly I should like to correct it. Speaking of the attitude toward older persons in the early stages of civilization, the correct quotation is "Religion gave them an aura, wisdom gave them a shield, and respect for accumulated surpluses extended their influence over possible heirs."

JOSEPH T. FREEMAN, M.D., Philadelphia.

LIVER DAMAGE FROM ARSENICAL REMEDIES

To the Editor:—In THE JOURNAL Dec. 30, 1939, page 2422, appears an editorial entitled "Public Interest in Venereal Disease," which states that "the number of doses of the arsenical drugs used for the treatment of syphilis amounted in the last fiscal year to 10,656,253, an increase of 84 per cent over the number of doses of such drugs used in 1933."

A cursory examination of these data along with the rules recommended by the U. S. Public Health Service reveals that they are highly commendable, but there is nevertheless a very definite warning which should be incorporated in this advice. At present our knowledge of liver function is adequate to establish the fact that one cannot use arsenic indiscriminately in all cases without occasionally producing liver damage which might subsequently cause serious consequences. In spite of the limited value of the various methods for testing liver function, liver damage due to arsenic can often be detected before clinical signs are apparent and the plan of therapy altered accordingly.

EDWIN J. GRACE, M.D., Brooklyn.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EARLY TABES: MARRIAGE, TREATMENT, PROGNOSIS

To the Editor:*—A white man aged 33 acquired syphilis some nineteen years ago in Egypt. He was intensively treated with arsenicals and with preparations of bismuth and mercury for a period of eleven years. No definite data are available as to the number of treatments or the dosage the patient received. Following a rest period of about sixteen months he was again treated for a period of four years, this time in England. For the next two years he received no treatment. He never had the spinal fluid examined, while the Wassermann reaction always remained four plus. Within the past year and a half he has received fourteen injections of neoarsphenamine 0.6 Gm., sixty injections (six courses) of bismuth salicylate 1 cc., ten injections of silver arsphenamine 0.3 Gm. and ten injections of tryparsamide 0.3 Gm. The blood Wassermann reaction at the beginning of the treatment was four plus and at the end of it three plus. The first spinal fluid examination showed the Wassermann reaction 2 plus, the Kahn reaction 2 plus, a mild syphilitic colloidal gold curve (122321000), globulin 3 plus (moderate trace), cell count 20 cells per cubic centimeter. At the end of the last series of treatments the spinal fluid Wassermann reaction was 1 plus, the Kahn reaction 2 plus, a weak syphilitic colloidal gold curve (11223221000), this result being negative from another laboratory, globulin 3 plus and the cell count 8 cells per cubic centimeter. The patient's general physical examination is essentially negative except for absent knee jerks. There are no cardiovascular signs or symptoms and no abnormal mental signs. The right pupil is smaller than the left, but both react to light and in accommodation. The Romberg sign is negative. The problem this patient presents concerns my advice to him about marriage as well as his mismanaged treatment in the past and the proper treatment in the future. Both the patient and his fiancée are aware of the nature of his condition as well as the probable hazard of economic liability. The questions which must be answered are: 1. Is marriage advisable? 2. What are the chances of his wife being infected? 3. What are the possibilities of their children having congenital syphilis? 4. What would the ordinary progress of his disease be under supervision and treatment and without it? 5. Could he carry on a normal life should his disease appear checked? Is life expectancy shortened? 6. What should his future treatment consist of, how long, and what is the prognosis?

M.D., New York.

ANSWER.—Before replying to the specific questions it is necessary to discuss the diagnosis and treatment of the case in question. While the data given as to neurologic examination are inadequate, nevertheless the inequality of the pupils and the absence of the knee jerks suggest that the patient has early tabes dorsalis. This suggestion is strengthened by the fact that the spinal fluid is abnormal. However, it is quite impossible to interpret the two spinal fluid examinations. The statement given that the Wassermann and Kahn tests on the spinal fluid are 1+ or 2+ has no significance in permitting any determination of the degree of spinal fluid abnormality or in correlation of serologic with clinical observations. The only permissible conclusion is that the patient's spinal fluid contains some reagin. Spinal fluid examination is hopelessly incomplete unless it includes a quantitatively titered complement fixation test (Wassermann test), using varying amounts of fluid ranging from 0.1 cc. to a maximum of 1 cc. If the complement fixation test is positive with the smallest amount of fluid named, 0.1 cc., the quantitative titration should be carried even lower, as for example, 0.05 cc., 0.025 cc., and so on. It is perhaps not absolutely necessary to have these data in order to plan intelligently for the immediate future, but the spinal fluid examination should be carried out in the manner indicated in the future, in order to determine progress and the desirability of termination of treatment.

As to past treatment, it can be said that sixteen and a half years of continuous chemotherapy is ridiculous for any type of syphilitic infection and is clearly indicative that the treatment given, while perhaps more than satisfactory in amount, has been less than satisfactory in type. It is taken for granted that when the inquirer mentions a dose of tryparsamide as 0.3 Gm. he actually means 3 Gm., since the former dose is homeopathic.

Nothing can be said as to the results of the treatment so far given from the serologic point of view. A change in the blood Wassermann reaction from 4+ to 3+ is of no significance. The change in the blood test, like that in hte spinal fluid, cannot be estimated unless the test is quantitatively titered.

To proceed now to the specific questions:

1. There is no medical reason to object to this patient's marriage provided his fiancée is aware of the nature of the condition and the probable hazards of economic disability, as the inquirer states that she is.

2. The chance of the patient's wife becoming infected is infinitesimally small and can be almost completely ignored. For

all practical purposes, syphilis is not infectious to the wife after the infection in the marital partner has existed for five years or longer.

3. There is no possibility that any children will have congenital syphilis unless the wife is infected. Congenital syphilis is never transmitted by the father alone and occurs only after the father infects the mother.

4. It is quite impossible to offer any estimate as to the progress of this patient's disease without further treatment. There is some chance that he might go happily through life without the development of any further symptoms or physical signs, even though additional treatment is not given. However, since he has already shown definite evidence of organic damage of the nervous system and since spinal fluid abnormalities still persist, it might be guessed that there is approximately a 50 per cent chance or greater of further progress if additional treatment is not given. If, on the other hand, the patient is properly treated from this point on there is approximately a 95 per cent certainty of complete arrest of the process at its present level.

5. He can carry on a normal life should his disease appear checked. Life expectancy is probably not shortened.

6. Since sixteen and a half years of chemotherapy has been unsuccessful in preventing the development of neurologic abnormalities clinically and in the spinal fluid, it may be taken for granted that further treatment of this sort is likely to be without avail. The patient should be immediately treated with nonspecific fever therapy, preferably with malaria, during the course of which he should be allowed to have from ten to twelve paroxysms, in each of which temperatures of 104 F. or over should be attained. Following the completion of the malaria treatment he should undergo six months of further chemotherapy with tryparsamide, twenty-six consecutive injections of 3 Gm. each, the first and last eight of which are combined with simultaneous intramuscular injections of bismuth subsalicylate suspension in oil, each 0.2 Gm. At the completion of this amount of treatment, and regardless of the serologic status, treatment may be at least temporarily discontinued. Following the completion of treatment the patient should be kept under observation indefinitely. For the first three years the blood and spinal fluid should be retested every six months, the blood test being carried out by a quantitative technic, the spinal fluid examination also including a complement fixation test by the quantitative technic described. At yearly intervals the patient should undergo a complete physical examination, with particular emphasis on the cardiovascular and central nervous systems. After three years of this sort of probation the periodic examinations of blood and spinal fluid and physical examinations may be done at yearly intervals instead of six month. They should be continued, however, at intervals of a year for an indefinite period, certainly from five to eight years, and thereafter at least as often as every two years. Treatment need not be resumed unless there is evidence of clinical progress or serologic relapse on a quantitative basis. It is entirely probable that the blood test will remain positive indefinitely and somewhat less likely, though quite possible, that abnormalities may persist in the spinal fluid Wassermann test. The cell count, protein and colloidal tests are likely to become negative. The persistence of these serologic abnormalities, unless they grow distinctly worse on the quantitative basis, however, is not an indication for the resumption or continuation of treatment.

CIRCUMCISION IN WOMEN

To the Editor:—**Every once in a while I hear an outburst from an osteopath in this neighborhood on circumcision in women. Kindly give me any information as to the ethics and value of this sort of procedure, if any.**

M. F. Smith, M.D., Raton, New Mexico.

ANSWER.—Circumcision in women is not often required, except for hygiene: accumulated smegma beneath an adherent prepuce sometimes is the cause of persistent annoying inflammation. There appears to be little foundation for the belief that an adherent clitoris is often responsible for frigidity: circumcision seldom increases libido. In this connection it may be pertinent to emphasize that the distance from the urethral meatus to the clitoris, accepted to be 2 cm. in the average case, is sometimes 3 cm. or more, and tends, particularly, to approach the latter figure in women who are frigid. The question arises as to whether the increased distance of the clitoris from the vaginal canal may account for some cases of unsatisfactory reaction at intercourse.

In those infrequent cases in which an adherent prepuce causes annoyance, freeing of the prepuce from the clitoris accompanied by a simple dorsal slit ordinarily accomplishes all that can be achieved with a more elaborate circumcision. Circumcision of women certainly cannot be recommended except in rare instances.

LATENT SYPHILIS

To the Editor:—**I have had under constant treatment a man aged 40, an American, since Oct. 4, 1938. When first seen he had extensive ulcers of the right lower leg of four months' duration which had failed to heal and had been diagnosed as varicose ulcers. The patient's Wassermann, Eagle and Kline reactions were all four plus. He has been faithful in his treatment, having received forty injections of mapharsen 0.06 Gm., and has also received 2 cc. of bismuth salicylate in oil, forty injections. The ulcers on his leg healed promptly and have remained healed. He is clinically free from symptoms but continues to show a four plus Wassermann reaction. The spinal fluid Nov. 4, 1938, showed a negative Eagle reaction. Wassermann and Kline tests were not made. The colloidal gold curve was 0000110000 and a second spinal puncture was made October 21 which showed the Wassermann reaction negative, Hinton reaction negative and Pandy test for globulin negative but colloidal gold 2222110000. (The patient has also received a large amount of iodide.) What further treatment, if any, should he receive? What should he be told as regards further treatment and the presence or absence of central nervous system syphilis?**

M.D., California.

ANSWER.—Apparently this patient falls in the group of so-called "Wassermann fastness," which is a poor term for a persistently positive Wassermann reaction in an individual who has become asymptomatic. The two negative spinal fluid tests eliminate the possibility of neurosyphilis as a background for the persistently positive Wassermann reaction, and if careful examination of the cardiovascular system is negative for aortitis it then seems justifiable to classify the case as one of latent syphilis with a persistently positive Wassermann reaction.

The treatment to date has been good and it seems advisable from now on to limit it solely to the use of bismuth compounds, preferably two courses with twelve injections to the course each year for the next two years. After that it seems advisable to place the patient on parole and have him return for physical examination each year.

Although a history of acute syphilis is lacking in the inquiry, it is probable that the patient has had his syphilis for ten or more years. If this is true, further treatment than the two years of bismuth compounds is not necessary. If in addition to the two negative spinal fluid examinations he shows no clinical signs of neurosyphilis, the patient may be told he does not have central nervous system syphilis.

POSTTRAUMATIC PSYCHOSES

To the Editor:—**I would appreciate some information as to present opinions concerning the acute psychotic episodes which sometimes occur as postoperative or posttraumatic complications: 1. In what proportion of these cases is alcoholism a factor? 2. In known alcoholic addicts who come in for acute surgical procedures, is it advisable to give them alcohol in the postoperative period as a preventive measure? 3. Is alcohol advisable therapeutically? 4. Is there any value in insulin provided the patient is not diabetic? 5. What drugs are most satisfactory for quieting the patient and in what doses? 6. What is the general duration of this complication? 7. What is the approximate mortality? 8. Please outline the procedure to adopt in treating a case.**

Henry S. Huber, M.D., New York.

ANSWER.—1. Alcoholism has a definite influence on the development of acute psychotic episodes following operations and trauma.

2. The sudden deprivation of alcohol after operation must be avoided.

3. Alcohol has no other therapeutic value.

4. Insulin has no value unless the patient is diabetic.

5. Morphine one-fourth grain (0.016 Gm.) or its derivatives probably serves best in control, but their administration should be used only in nonaddicts.

6. It lasts usually a few days but maybe longer.

7. There is no mortality from the psychotic episodes alone.

8. Fluids and sedatives should be used.

ABSORPTION OF AIR BY TISSUES

To the Editor:—**I should like to inquire how long air will remain in a wound before being absorbed: first in a lacerated wound which is left open, second in a cutaneous wound which penetrates fascial planes but without laceration of deeper tissues, in which the cutaneous wound is closed.**

M.D., Ohio.

ANSWER.—The time during which air will remain within the tissues depends almost entirely on the quantity introduced. The best evidence has been obtained in cases of tuberculosis in which measured quantities of air have been introduced into the pleural cavity in the production of artificial pneumothorax. It is estimated that 500 cc. of air introduced into a normal pleural cavity is absorbed within two weeks. The amount of air that might ordinarily be introduced into a penetrating or lacerated wound would be entirely absorbed in a few hours.

RECURRENCE OF PLACENTA PRAEVIA

To the Editor:—A patient had a normal pregnancy and delivery in 1933 and placenta praevia in 1934 and again in 1936. She desires more children but hesitates because of past experiences. What are her prospects? Is there a predisposition to placenta praevia in certain individuals and, if so, can anything be done about it?

M. A. Kline, M.D., Dalton, Pa.

ANSWER.—Placenta praevia is not likely to recur in subsequent pregnancies. In a careful study of some 300 patients with placenta praevia, the condition recurred in only two individuals. This incidence is no greater than the incidence in pregnancy. It is therefore unlikely that the patient referred to would have a reptition of her experiences. She can be encouraged to become pregnant again.

STREPTOCOCCI IN THROAT OF CHILDREN'S NURSE

To the Editor:—In the opinion of public health authorities does the routine finding of Streptococcus viridans or Streptococcus haemolyticus in the throat of a healthy girl make it dangerous or inadvisable to employ her as a nurse for young children? I have advised the mother of the children that the organisms are frequently found on routine examination and are of no significance.

Edward F. Briggs, M.D., Mount Kisco, N. Y.

ANSWER.—Streptococcus viridans is found in all adult throats and is of no significance. Hemolytic streptococci in the throat of a nurse would be objectionable and a source of danger to children.

EARACHE AND MENSTRUATION

To the Editor:—In further comment on "Earache and Menstruation," which appeared in Queries and Minor Notes in The Journal, May 27, 1939, page 2196, I should like to mention the following additional references: Kuttner writes in his book "Die nasalen Reflexneurosen" (nasal reflex neuroses) (1904): Haug reports four women with sensations of pain and subjective sounds in the ears, which either appeared or were intensified during the menstrual period. By cocainization or by cauterization of the nasal mucosa the pains could be overcome. The paper by Haug is titled Ueber die Beeinflussung gewisser subjektiver Ohrerscheinungen durch Behandlung der genitalen Sphäre der Nase (modification of certain subjective ear symptoms by treatment of the genital sphere of the nose) *Monatsschrift für Ohrenheilkunde*, 1903, p. 96.

Isac Bamberger, M.D., Jerusalem, Palestine.

FLUOROSCOPY IN MINIMAL TUBERCULOSIS

To the Editor:—In Queries and Minor Notes in The Journal, there appears an answer to the question "Will you kindly inform me as to the reliability of fluoroscopic examination in detecting cases of minimal tuberculosis?" It seems to me that this question was completely decided many years ago and decided in the negative. Fluoroscopic examination of the chest, properly performed by trained radiologists and other physicians, permits the detection of extensive pulmonary lesions, many of them not detectable by ordinary physical examination. However, fluoroscopic examination alone causes one to overlook approximately 20 per cent of "positive" cases, including cases of active pulmonary tuberculosis. (Voigtlander, Wolf: *Roentgenpraxis* **7**: 433 [July] 1935. Licht, Eric de Fine: *Acta radiol.* **17**: 105 [April] 1936. Dunham, Kennon: *Am. J. Roentgenol.* 1925 and following volumes). The detection of minimal cases of tuberculosis requires the combination of competent roentgenographic examination, occasional fluoroscopic examination, and correlation of the results with associated clinical and laboratory data.

L. H. Garland, M.D., San Francisco.

BODY ODOR

To the Editor:—In Queries and Minor Notes, Jan. 27, 1940, page 346, there is a discussion headed "Body Odor, or Bromidrosis." This almost certainly is a neurotic reaction to a normal odor. All the evidence for this conclusion is present in the inquirer's letter. His question would be better answered by a psychiatrist.

Franklin C. McLean, M.D., Chicago.

To the Editor:—In Queries and Minor Notes in the Jan. 27, 1940, issue of The Journal, on page 346, the answer to the inquiry regarding body odor or bromidrosis, although adequate in some respects, does not in my estimation fully cover the other possibilities presented. In the first place, the doctor presenting the question has stated that although he has seen the patient on several occasions he could note nothing more than the usual odor present around the perineum. It seems to me that the possibility of this condition being entirely subjectively present has been overlooked, and no consideration has been given in the answer to a condition, although rare, which is sometimes seen in women who have symptoms of a hippocampal gyrus or uncinate process tumor along the olfactory tract. In these cases hyperosmia or offensive odor is induced by the patient alone and cannot be substantiated, since the reception of this so-called smell is of central origin. Another condition, although the patient is rather young for it, which might have been mentioned is that of psychotic disturbances associated with the menopause.

Ludwig G. Lederer, M.D., Chicago.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, February 17, page 605.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part II, May 1-2; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: November 1940. *If a sufficient number of applications are received before March 1 there will be an examination at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 7-10. *Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Memphis, Tenn., Nov. 17, preceding the annual meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Various centers, April 1. Sec., Dr. J. Stewart Rodman, 225 South Fifteenth St., Philadelphia.

California August Examination

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, Aug. 8-10, 1939. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. Seventy-seven candidates were examined, seventy of whom passed and seven failed. The following schools were represented:

PASSED School	Year Grad.	Per Cent
College of Medical Evangelists	(1938)	75.9, (1939) 76.3, 77.3, 77.7, 78.2, 79.2, 79.2, 79.3, 79.7, 80.6, 82, 82.6, 82.6, 82.7, 82.8, 83.2, 84.1, 84.3, 85.9
Stanford University School of Medicine	(1936)	75, (1937) 75, (1939) 75, 75.1, 78.1, 84.1
University of California Medical School	(1939)	81.3, 82.3, 83.2, 84, 85.4
University of Southern California School of Medicine	(1939)	78.6, 79, 79.3, 81, 82, 82.1, 82.2, 82.3, 82.7, 83, 83.1, 83.2, 83.6, 84.2, 84.4, 84.9, 85.8, 86.1, 86.9, 87.1
University of Colorado School of Medicine	(1939)	82.7
George Washington University School of Medicine	(1938)	82
Northwestern University Medical School	(1939)	85.7*
University of Illinois College of Medicine	(1939)	82.1†
University of Kansas School of Medicine	(1938)	78
University of Louisville School of Medicine	(1938)	83.2
University of Maryland School of Medicine and College of Physicians and Surgeons	(1938)	83.4
Wayne University College of Medicine	(1939)	81.7
University of Minnesota Medical School	(1939)	80.9
Washington University School of Medicine	(1938)	81
Creighton University School of Medicine	(1938)	75.9
New York University College of Medicine	(1939)	80.6
Western Reserve University School of Medicine	(1939)	84.6
University of Oregon Medical School	(1939)	81.8
Temple University School of Medicine	(1937)	86.1, (1939) 77.7
McGill University Faculty of Medicine	(1938)	79.8
Medizinische Fakultät der Universität Wien	(1930)	82
Universiteit van Amsterdam Geneeskunde Faculteit	(1932)	79.2

FAILED School	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1938)	71.8
College of Medical Evangelists	(1939)	73.8, 76.3‡
Rush Medical College	(1938)	71.6
Medizinische Fakultät der Universität Wien	(1936)	74.8
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1903)	55.6
Latvijas Universitäte Medicinas Fakultäte, Riga	(1928)	67.4

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

† This applicant has completed four years' medical work and will receive an M.D. degree on completion of internship.

‡ Fell below 60 in two subjects.

California October Report

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Sacramento, Oct. 17-19, 1939. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. Fifty-six candidates were examined, fifty-three of whom passed and three failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1939) 79.7, 81.4, 84.2,	84.3
Stanford University School of Medicine		(1935) 84.2, (1938)	86.7
University of California Medical School		(1938) (1939) 81.6, 84.6, 88.2	82.3,
University of Southern California School of Medicine		(1939)	86.8
Howard University College of Medicine		(1938)	75
Northwestern University Medical School		(1939) 82,	89.1*
Johns Hopkins University School of Medicine		(1936)	80.3
University of Minnesota Medical School		(1938)	86.7*
St. Louis University School of Medicine		(1939)	87.3
Creighton University School of Medicine		(1937) (1939) 75.8, 85.1, 85.6	78.8,
University of Nebraska College of Medicine		(1939) 84.1,	85.7
Long Island College of Medicine		(1939)	83.7
University of Oregon Medical School		(1939) 76.7,	79
University of Tennessee College of Medicine		(1939)	79.7
University of Wisconsin Medical School		(1935)	79.7
University of Alberta Faculty of Medicine		(1938)	82.8
McGill University Faculty of Medicine		(1921) 85.4, (1935) (1938) 80, 80, (1939) 75.8, 79.6, 79.8, 80.7, 83.1, 85.3, 86.9, 87.3, 87.3, 87.6	82.6,
Medizinische Fakultät der Universität Wien		(1914) (1932) 76.1, (1935) 78	89.8,
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England		(1928)	89.3†
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1903)	97.1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1916) 78.9, (1922)	84.6
Universität Heidelberg Medizinische Fakultät		(1915)	75.6
Universytet Jana Kazimierza Wzdzial Ledarski, Lwów		(1935) (1936) 80.9	88,

School	FAILED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia		(1939)	73.6
Universita Karlova Fakulta Lékarská, Praha		(1936)	46.6
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1931)	66.6

Fifty-one physicians were licensed by reciprocity and ten physicians were licensed by endorsement from September 27 through December 7. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1924), (1938)	Colorado
University of Georgia School of Medicine		(1934)	Georgia
Northwestern University Medical School		(1924)	Illinois, Kentucky
Rush Medical College		(1931), (1933), (1935) (1936)	Illinois, Michigan
The School of Medicine of the Division of Biological Sciences		(1934)	Illinois
University of Illinois College of Medicine		(1930)	Idaho
Indiana University School of Medicine		(1934, 2)	Indiana
State University of Iowa College of Medicine		(1927, 2)	Iowa
University of Kansas School of Medicine		(1930)	Kansas
Tulane University of Louisiana School of Medicine		(1930) (1934)	Mississippi, Minnesota
Johns Hopkins University School of Medicine		(1938)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1936)	Maryland
University of Minnesota Medical School		(1925) (1934)	S. Dakota, Minnesota
St. Louis University School of Medicine		(1918) (1936)	Colorado, Illinois, (1938) Missouri
Washington University School of Medicine		(1926) (1933)	Kansas, Missouri
Creighton University School of Medicine		(1927) (1933)	Minnesota, Kansas, (1935) Iowa
University of Nebraska College of Medicine		(1926) (1930), (1935), (1936), (1938, 2)	Ohio, Nebraska
Columbia University College of Physicians and Surgeons		(1915)	New Jersey
Long Island College Hospital		(1920)	New York
University and Bellevue Hospital Medical College		(1919), (1930)	New York
Ohio State University College of Medicine		(1938)	Ohio
University of Oklahoma School of Medicine		(1928)	Oklahoma
University of Pennsylvania School of Medicine		(1929) (1934)	Utah, Pennsylvania, (1935) Kansas
Meharry Medical College		(1935)	Illinois
Vanderbilt University School of Medicine		(1891)	Oregon
University of Vermont College of Medicine		(1913)	Penna.
Medical College of Virginia		(1928)	Virginia
University of Wisconsin Medical School		(1936)	Wisconsin
University of Manitoba Faculty of Medicine		(1930)	N. Dakota

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1936), (1937) (1938, 3)	N. B. M. Ex.
University of Illinois College of Medicine		(1939)	U.S.P.H.S.
Johns Hopkins University School of Medicine		(1934)	N. B. M. Ex.
Harvard Medical School		(1933)	N. B. M. Ex.
St. Louis University School of Medicine		(1937)	N. B. M. Ex.
University of Oregon Medical School		(1933)	N. B. M. Ex.

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

† License has not been issued.

Book Notices

Modern Clinical Psychiatry. By Arthur P. Noyes, M.D., Superintendent, Norristown State Hospital, Norristown, Pennsylvania. Second edition. Cloth. Price, $5. Pp. 570. Philadelphia & London: W. B. Saunders Company, 1939.

The author who wishes to write a useful book on psychiatry is confronted with the problem of how much to include. Encyclopedic textbooks of psychiatry similar to those which are so readily available in internal medicine and surgery seem as yet to have no place in the library of the psychiatric student. Since the subjects covered by the conventional textbooks of mental medicine are more or less the same, the value of such books must rest on their modernness, the fluency of their presentation and the interest engendered thereby, as well as the accuracy of the facts presented. The first edition of Noyes's textbook stood out. It had all the characteristics which are indispensable for satisfactory textbooks, and the selection of matter as well as the style were better than those in most of the other psychiatric works. The present edition has been somewhat improved. Some of the contents have been brought down to date, in fact, so much so that the chapter on schizophrenia closes with several excellent pages dealing with shock treatment of that disorder, a development largely of the past two years. In spite of the fact that nonhospital psychiatrists, of whom there are now a large number, have to deal with conditions other than the psychoses, the majority of chapters of Noyes's book deal only with those major mental disorders which usually require hospitalization. Only the last three chapters are of any value to the general medical man or to the psychiatrist who has to deal with conditions which might be seen in an outpatient department of a hospital or in the private office. There is no chapter on child guidance. There is little on criminology except what is included under psychopathic personality. The presentation of hospital cases, of the frank psychoses and of that material which forms the groundwork of psychiatry, however, is satisfactory and this book ranks well up with the other textbooks recommended for students of the subject written in the field of psychiatry.

The Larval Trematoda Found in Certain South African Mollusca with Special Reference to Schistosomiasis (Bilharziasis). By Annie Porter, D.Sc., F.R.S.S., F.L.S., Research Associate in Zoology, McGill University, Montreal. Publications of the South African Institute for Medical Research No. XLII (Vol. VIII). Paper. Pp. 492, with 2 illustrations and 83 plates. Johannesburg, 1938.

Schistosomiasis is a widespread disease of man, other mammals and birds. It is due to infection by adult flukes which live in the blood stream and whose abundant eggs lodge in the capillaries of the bladder and intestine, producing local inflammation and not infrequently resulting in neoplasms. The eggs, discharged in urine or feces, hatch in water into free-swimming miracidia, which bore into fresh-water snails, pass through larval stages and emerge as fork-tailed free-swimming cercariae, which pierce the skin of the vertebrate host and find the blood stream, in which they complete the complicated life cycle.

All public health measures in prophylaxis and local eradication of the disease rest on the zoologic knowledge of the habits, life history, ecology and immunology of both the parasite and its intermediate host or hosts, for the fluke adapts itself to various mollusks.

This debilitating and potentially dangerous infection of man depends for its continuance on insanitary habits of infected persons whose urine and feces continuously containing fluke eggs are deposited in or otherwise find their way into bodies of water in which the snail hosts feed and breed. These same waters are usually the sources of water for drinking, and also the public laundry and bathing resort of young and old. Thus the vicious circle is maintained.

The biologic intricacies of the blood fluke problem appear in the following facts: There are two prevalent types of the disease, the urinary and the intestinal, due to two different flukes, Schistosoma haematobium and S. mansoni, living as larvae in different snails. The two diseases, the two flukes and the varied molluscan hosts are spread over the whole of watered inhabited South Africa as well as widely over the tropics, and a third fluke, S. japonicum, is repeatedly brought in by Orientals in shipping and travel. Further complications arise from the facts that the snail hosts have also other fluke infections and that other snails

may be susceptible to the infection. Man is liable also to be attacked by the skin-penetrating cercariae of the flukes parasitic in other mammals which give rise to swimmers' rash. It is virtually impossible to exclude snails from public water supplies and natural waters used for bathing. Copper sulfate in the ratio of 1 to 500,000 or even 1,000,000 is effective in killing most of the snails.

The author's recommendations based on biologic evidence include prevention of contamination of public waters by human feces and urine, protection of the individual from infection, and destruction of the molluscan hosts and of the infective cercariae. The first can be accomplished by sanitation in modern cities but is difficult with illiterate and uninstructed native peoples with established modes of life and no sanitary conveniences. The second means providing cercariae-free water from deep wells for bathing consists of allowing the snail-free water to stand seventy-two hours before use, since the larvae die within that time after leaving the snail. The treatment and cure of all infected persons will also accomplish the same end locally and for a time. The last can be carried out largely by engineering control of all artificial waters in which periods of drought can be utilized to kill off the snails and reduce the water to areas available for treatment with copper sulfate. The disease in man yields to continued use of antimony and potassium tartrate.

This book is a mine of information on fluke infections of snails. The text and illustrations record and picture no less than 112 different cercariae from twenty-eight species of South African mollusks. There are also fully illustrated accounts of the morphology, larval stages, intermediate hosts and ecology of the schistosome flukes of man and his domestic animals. Experimental work on modes of infection, behavior and immunologic reactions is included. The book is a superb piece of parasitologic work in one of the most important fields of human parasitology carried out with a broad vision of the most essential biologic principles involved, with a wealth of detail and a high degree of accuracy.

Sport, Physical Training and Womanhood. By Stephan K. Westmann, M.D., L.R.C.S., L.R.C.P. With a foreword by Sir Kaye Le Fleming, M.A., M.D., Member and Vice-Chairman, Medical Sub-Committee, National Fitness Council, England. Cloth. Price, $4. Pp. 222, with 73 illustrations. Baltimore: William Wood & Company, 1939.

This astonishing volume, written by a physician who appears to have been trained in Germany, impels the reader to turn to the title page to discover whether its date is 1889 but he finds it printed as 1939. Further, he discovers that the author is set down as eminent both as an obstetrician and as an athlete. But his astonishment is abated no whit, for the author's principal thesis is that girls and women should not engage in competitive sports lest their child bearing be made impossible or difficult.

This thesis is supported by statements such as the following: "The champion of today, in all probability, has already suffered injuries that will bring her tomorrow to a doctor's consulting room . . . with health shattered." "Many competitive sports necessitate sexual abstention for men while training." "Too much activity in sports of a masculine character causes the female body to become more like that of a man. This holds good . . . in regard to the genital organs, for they tend to decay." It is stated in all seriousness that tennis is a dangerous game for a woman, particularly if she is menstruating, because a swiftly moving tennis ball, striking her abdomen, might cause injury to the organs of the lower part of the abdomen. Few persons who have played tennis regularly for forty years have ever been struck in the abdomen by a swiftly moving tennis ball and it would do nothing but make the skin smart if they were. The ball is a light one.

When discussing riding, the author ventures the thought that the side saddle tends to a somewhat strained posture. As a good sport for women he suggests lacrosse, one of the most dangerous and violent games played by our young men. One shudders at the thought of a lacrosse stick striking a woman in the abdomen.

The author's entire trend of thought is foreign to the line of progress in the United States during the last fifty years, although it may be more acceptable for Germany. He is quite right in stating that competitive exercise may be overdone by women—or men. His general presentation of the effects of competitive exercise on women is quite unconvincing to an American.

On one page he attempts to demonstrate that physical activity reduces the size and changes the shape of the pelvis so as to make child bearing difficult. On another page he recalls to our minds that only civilized and modern women have such difficulties and that childbirth among primitive women was a simple and relatively easy physiologic function. In the name of all that is true and beautiful, what were the physical activity habits of those primitive women? They may not have ridden side saddle but they have been charged with being continuously active.

Some good exercises for use during pregnancy and the puerperium are given in the latter part of the book, but there are so many inaccuracies, inconsistencies and anachronisms that the reader must lose confidence in the good material also.

Cancer of the Larynx. By Chevalier Jackson, M.D., Sc.D., LL.D., Consultant in Broncho-Esophagologic Research, Temple University Medical School, Philadelphia, and Chevalier L. Jackson, A.B., M.D., M.Sc., Professor of Broncho-Esophagology, Temple University Medical School. Cloth. Price, $8. Pp. 309, with 239 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

The authors in the preface explain the division of the book into three parts under the headings of procedures, general considerations and historical notes as being an attempt to furnish information from three different points of view. In the first instance their aim is to present briefly such practical information as may be applicable to a particular case in hand. The second division provides a broader basis for study, for comparison of results by methods and for expanding the reader's knowledge through a discussion of pathology, diagnosis, borderline cases and subjects that are still of a controversial nature. The third part of the book is designed to round out the picture by detailing the historical development of our knowledge of this fascinating subject. Needless to say, the authors have done a good job. Stripped of nonessentials, the consensus of our present day knowledge of cancer of the larynx is presented in orderly fashion so that he who runs may read and profit. In addition to Jackson's subperichondrial laryngofissure, which the authors have long favored and with which they have had remarkable success, they present the details of both "narrow field" and "wide field" laryngotomy as well as the modifications which have been in vogue from time to time. The chapter on articulate speech after laryngectomy, though brief, furnishes considerable information in this perplexing subject, and the chapter on treatment of cancer of the larynx by irradiation is marked by a sane and cautious consideration of what is still a moot question. As might be expected, Jackson's colored drawings of the laryngeal picture under various states of disease are present in sufficient number to delight the eye and stimulate the observer to more careful observation and appreciation of the images he sees in his mirror. This excellent little book successfully bridges the gap since Thompson's publication in 1930 and brings the laryngologist's library down to date in a vital and absorbing topic.

The Measurement of Adult Intelligence. By David Wechsler, Chief Psychologist, Bellevue Psychiatric Hospital, New York. Cloth. Price, $3.50. Pp. 229, with 12 illustrations. Baltimore: Williams & Wilkins Company, 1939.

The author points out that for some time there has been a distinct need for good tests of adult intelligence. The modified Binet test contains a poor means of differentiation between the smart and the dull adult, although the dull adult, of course, can be compared with a child. With the help of some Works Progress Administration workers and his own staff, Wechsler at the Bellevue Psychopathic Hospital in New York has developed a new scale which is especially adapted for the evaluation of adult intelligence. In discussing some of the factors involved in measuring adult intelligence the author goes on to explain some of the details which were elicited by developing the present scale. For instance, one of the things that are noticeable is that test results in an adult scale decrease with age. There are other factors which apparently have never been adequately studied on adults, which Wechsler has studied. While many of the tests on this scale are modified from the older Binet scale and the performance scales in general use in clinics and mental hospitals, he has added some which are specific to the present method of measuring. One of these is a good general knowledge test. Various facts of the scale have been adequately validated according to methods which are commonly used. The author shows a few special statistical methods in a part of the

book devoted to the subject. The test apparently is quite reliable. Wechsler devotes considerable time to a discussion of the selection and description of the test, the population used in standardizing the test, the results of standardization, and the limits and special merits of the scale. He also has tables which are used in the easy determination of the intelligence quotients. All in all, the author presents a new technic which should be of some value to psychiatrists who have bemoaned the lack of the means of evaluating that trait which is so necessary of evaluation but so little understood—general adult intelligence. The present test certainly is a step forward, providing the psychologist working with the psychiatrist another tool in the diagnosis of mental patients.

Protozoology. By Richard Roksabro Kudo, D.Sc., Associate Professor of Zoology, the University of Illinois, Urbana. Second edition of Handbook of Protozoology. Cloth. Price, $6.50. Pp. 689, with 291 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1939.

This new edition of the author's Handbook of Protozoology (1931) has been completely rewritten, reset and greatly enlarged. Whereas the first edition had 175 illustrations showing 1,463 figures, this edition has 291 illustrations with 2,711 figures. As now constituted it offers the content of textbook, laboratory manual, reference work and an atlas of the free-living and parasitic Protozoa. The first six chapters treat of the ecology, morphology, physiology, reproduction and variation and heredity of the Protozoa, and chapters 7 to 43 give a systematic analysis of the families, many of the genera, and the more significant and representative species of this marvelously diverse group of so-called simple organisms. It is a valuable work of reference for every medical library.

Practical Obstetrics. By P. Brooke Bland, M.D., Consulting Obstetrician, Jefferson Medical College Hospital, Philadelphia, Pa., and Thaddeus L. Montgomery, M.D., Clinical Professor of Obstetrics, Jefferson Medical College, Philadelphia, Pa. Third edition. Cloth. Price, $8. Pp. 877, with 529 illustrations. Philadelphia: F. A. Davis Company, 1939.

A critical review of the previous edition of this book was published in THE JOURNAL Feb. 2, 1935. In rewriting and revising the book for the present edition, the authors gave consideration to some of the points mentioned in the previous review. In this revision, particular attention has been given to the chapters on toxemias of pregnancy, endocrine physiology, obstetric anesthesia and the treatment of the newborn. This edition contains 502 engravings, including twenty-seven colored plates, whereas the second edition contained twenty-one colored plates. The illustrations in general are good. As the book is intended primarily for students, the authors have kept in mind brevity and directness. That the text has been brought abreast of the time is shown in the chapter on the treatment of puerperal complications by means of sulfanilamide, which the authors say is of value in septic puerperal complications when infection is due to the streptococcus; however, its effect and action should be closely watched, in view of the untoward reactions that occur in some cases. The final chapter, entitled "Obstetric Jurisprudence," precedes the section on referred reading, which gives the references that were consulted in the preparation of the book. This edition contains a few more pages than the second edition, but it remains a handy and good-looking volume.

Microbiology and Pathology. By Charles F. Carter, B.S., M.D., Director, Carter's Clinical Laboratory, Dallas, Texas. Second edition. Cloth. Price, $3.25. Pp. 755, with 190 illustrations. St. Louis: C. V. Mosby Company, 1939.

This textbook, written primarily for student nurses, is largely devoted to bacteriology. Considerable space is devoted to general principles and methods, which are described in simple form. The portion discussing pathology for schools of nursing of high standards is somewhat deficient in text on the general phases. The chapters on special pathology include descriptions of laboratory observations, which in most books are usually segregated under clinical pathology. Illustrations are numerous and include twenty-five good colored plates. Each chapter ends with a list of helpful questions for review. A glossary of common medical terms is a useful addition. It is difficult to evaluate books for nurses, as the courses in bacteriology and pathology vary considerably; but, on the whole, this volume will meet the requirements of most training schools.

A Textbook of Pathology for Nurses. By Coleman B. Rabin, B.S., M.D., Associate in Medicine and Assistant Radiologist to the Mount Sinai Hospital, New York. Second edition. Cloth. Price, $1.75. Pp. 266, with 68 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

The material is presented by the author in an elementary manner so that the fundamentals of pathology can be readily grasped by nurses. There is a departure from the usual style of compiling textbooks on pathology, as the author endeavors to stress the pathologic physiology of diseases in which nursing has an important part. The chapters on ulcers, obstruction of the gastrointestinal tract and obstruction of the urinary tract demonstrate this point. In spite of these features the treatment of the material is somewhat inadequate. Diseases of the central nervous system, the blood and the blood forming organs are barely mentioned. The chapter on clinical pathology is similarly short and inadequate. However, the numerous illustrations and diagrams add considerably to the value of the contents.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Negligence in Treatment After Conization of the Cervix.—The plaintiff suffered from a retroverted uterus, an eroded and encysted cervix, appendicitis and dysmenorrhea. The defendants performed an operation on her Feb. 17, 1934, consisting of the removal by electrosurgery of a conical-shaped portion of the lower end of the cervix, in the region of the external os, after which the cervix was packed with iodoform gauze. An abdominal operation was then performed for the suspension of the uterus and the removal of the appendix. Alleging that subsequent disabilities experienced by the plaintiff were due to the negligence of the defendants in performing the conization operation, the plaintiff brought suit and obtained a judgment for $7,500, from which the physicians appealed to the Supreme Court of Iowa.

From the record, said the Supreme Court, it was evident that in an operation of the kind performed on the plaintiff raw surfaces are left around the cervical canal, and if nothing is done to prevent them coming in contact they will occlude and close the canal. The evidence showed that the only thing done to keep the canal open was to place gauze in it, which was removed a day or two after the operation. From the date of the operation until the time that the plaintiff left the hospital nineteen days later, the jury could have found from the evidence, the court said, that, with the exception of the removal of the gauze, there was no examination of the cervix, no treatment of the wound and nothing done to hold apart the raw surfaces. The following April, May and June the plaintiff had periods of intense suffering, and on June 24 she applied to the defendants for relief. At that time the cervical canal was opened with dilators, no anesthetic being given. The plaintiff was in the hospital about twenty-four hours at that time. Again in July and in August she suffered cramps with great intensity and severity in length of time. She again appealed to the defendants for aid on August 11 and at that time the cervix was "grown over with the same sort of scar tissue as before." Again the cervical canal was opened with a dilator, without the use of an anesthetic, but no precaution was taken to prevent future occlusion. November 25, the plaintiff returned to the defendants for treatment, but she refused to go to the hospital for the purpose of again having the cervical canal opened up, stating that she could not stand the pain. She apparently returned home without any treatment. Early in December 1934 another practitioner attempted to establish an opening in the cervical canal but was not successful and thereafter removed the uterus.

The defendants complained that the trial court erred in submitting to the jury, as a basis for finding the defendants liable, the subsequent treatment following the plaintiff's discharge from the hospital in 1934. But, the court said, the petition did not limit the treatment to the time the plaintiff was in the hospital.

She employed the defendants to treat her until she had recovered. The defendants knew that the operation necessitated a long subsequent period of treatment in order to effect a cure. The site of the operation required inspection, to see whether the wound was healing properly; it required "dressing," and this was the duty and responsibility of the defendants.

A medical witness testified that the procedure and methods used by the defendants were not those ordinarily used; that it was essential for the canal to be kept open and for keeping the canal open various methods were used, and that inspection had to be made frequently to see that the canal was kept open. While there was some conflict in the testimony on the part of the other physicians who testified on behalf of the defendants, the question was one for the jury. The defendants further argued that the trial court erred in failing to instruct the jury properly relative to the plaintiff's burden of showing the necessity of removing the uterus. It was the defendants' theory that the jury, in determining the matter of necessity, should consider only opinions of experts regardless of whether or not the experts themselves had fixed any standard of necessity. One physician, said the court, might say that what was necessary was to be gaged by whether the plaintiff's life depended on a certain course. Another might think that necessity should be gaged by whether the plaintiff's intense discomfort or pain could be avoided by the removal of the uterus. Still another physician might think that preservation of the ability to bear children was more important than the risk of death or long suffering and therefore that the plaintiff should be subjected to a risk of death or long suffering rather than have the uterus removed. For this reason, the court pointed out, the opinion of physicians as to the fact of necessity is not controlling on the jury. The jury is well able to say whether the preservation of life, the freedom from long pain or suffering or the preservation of the power to bear children, regardless of the risks that might accompany it, shall be the standard of necessity.

The defendants finally objected to the testimony of a physician who lived in a community some 70 miles from the one in which the operation was performed, on the ground that the witness was not qualified to testify. But, said the court, the undisputed evidence showed that the witness was qualified in all respects regarding his knowledge of this particular type of operation and his testimony showed the standard of practice of the general locality surrounding the city of operation. To lay down a rule, the court said, that no one could testify except a physician from the particular town in which the medical man being sued lived would be unfair and unreasonable. A physician is bound to exercise that skill and care ordinarily possessed under like circumstances, not merely in the same community but in like localities.

The court could find no error in the record, and the judgment for the plaintiff was affirmed.—*Kirchner v. Dorsey & Dorsey (Iowa), 284 N. W. 171.*

Medical Practice Act: Charter of State Naturopathic Association Inadmissible as Evidence.—One C. L. Hawkins was convicted of practicing medicine without a license and appealed to the court of criminal appeals of Texas.

The medical practice act of Texas provides that any person shall be regarded as practicing medicine within the meaning of the act:

1. Who shall publicly profess to be a physician or surgeon and shall treat or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury, by any system or method, or to effect cures thereof.

2. Who shall treat or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury, by any system or method, or to effect cures thereof and charge therefor, directly or indirectly, money or other compensation.

It was not necessary, said the court, for the information to charge that Hawkins publicly professed to be a physician and surgeon and offered to treat any disease or injury, mental or physical; it was sufficient for it to charge that he treated or offered to treat as set forth in the second quoted subparagraph. The information might have charged in the language of either or both subparagraphs, because if Hawkins did the things mentioned in either he came within the statutory definition of what constitutes the practice of medicine. Furthermore, the information did not have to negative the exceptions contained in the medical practice act; if Hawkins came within any of the exceptions he could offer that fact as a defense.

The evidence showed that Hawkins had a sign in his yard which read as follows:

Dr. C. L. Hawkins, Telephone Number 87-3646, Chiropractor, Naturopathic, Toxine Elimination, Exercise and Health Diet and Health Service.

A person suffering from pulmonary and intestinal tuberculosis applied to Hawkins for treatment and on two different occasions Hawkins supplied the person with medicine, advising him to take a spoonful each morning and night. For this treatment the person paid $4 on one occasion and $3 and some cents on another. In the opinion of the court, this evidence was sufficient to sustain the conviction.

Hawkins complained because the trial court declined to permit him to offer in evidence the Charter of the Texas State Naturopathic Association. The appellate court was unable to understand on what theory this document might have been admissible. A charter granted to an association by the Secretary of State, the court said, would not authorize any one to engage in the practice of medicine without having complied with the medical practice act; nor could it relieve any one from prosecution for a violation of that act.

Finding no reversible error in the record, the court of criminal appeals affirmed the judgment of conviction.—*Hawkins v. State (Texas), 125 S. W. (2d) 580.*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Birmingham, Apr. 16-18. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.
American Association for the Study of Goiter, Rochester, Minn., Apr. 15-17. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.
American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
American College of Physicians, Cleveland, Apr. 1-5. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.
American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.
American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.
American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.
American Society of Biological Chemists, New Orleans, Apr. 13-17. Dr. C. G. King, Dept. of Chemistry, Univ. of Pittsburgh, Pittsburgh, Secretary.
Arizona State Medical Association, Tucson, Apr. 18-20. Dr. Leslie R. Kober, 15 East Monroe St., Phoenix, Secretary.
Arkansas Medical Society, Fort Smith, Apr. 15-17. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.
Northern Tri-State Medical Association, Battle Creek, Mich., Apr. 9. Dr. E. Benjamin Gillette, 320 Michigan St., Toledo, Ohio, Secretary.
Pacific Coast Surgical Association, Portland, Ore., Apr. 3-6. Dr. H. Glen Bell, University of California Hospital, San Francisco, Secretary.
Tennessee State Medical Association, Chattanooga, Apr. 9-11. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Twelfth Annual Meeting, Held in Chicago, Nov. 3 and 4, 1939

(Concluded from page 614)

Treatment of Climacteric Symptoms with Stilbestrol

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: Continuing the comparison of different estrogenic substances for the relief of menopausal symptoms, it has been found possible to get complete relief in each case tested by the oral administration of the synthetic estrogen stilbestrol. A group of seventeen women have been observed over a total of seventy-five months of treatment, with the average duration of therapy four and one-half months. The individual patients received the medication for from two to eight months each. A wide range of doses has been tried, from minimum levels of 0.1 mg. a day to a maximum of 15.0 mg. a day. In only three cases was the dose of 5.0 mg. exceeded, and in only two was more than

5.0 mg. needed to continue the relief. With only one patient has there been relief from use of less than 0.5 mg. a day. The effective dose range seems therefore to be from 0.5 to 5.0 mg. daily.

Test of the adequacy of treatment by the vaginal smear shows stilbestrol to be very potent. Doses ranging from 0.5 to 5.0 mg. maintained the presence of cornified cells in a state of maturity comparable to that of the normal midinterval smears in the period of fertility. The stimulation of endometrial activity was more marked than has been the common experience with naturally occurring estrogens, as shown by the occurrence of postmenopausal bleeding in at least four of the seventeen women. In two of these the bleeding has been so bothersome that treatment was discontinued for a period.

Significant complications which have necessitated discontinuance of medication include only nausea, headache and lassitude. These symptoms have been relieved by reducing the dosage, without sacrificing clinical control. In three cases exception to this statement must be made because of the gradual development of persistent headache in one, of nausea in another and of marked lassitude in the third. These "toxic" manifestations appeared only after months of satisfactory use of the drug in 0.8, 1.0 and 5.0 mg. doses. Relief from the symptoms was secured after a number of days with no stilbestrol and return to natural estrogen therapy.

The benefits noted in this series include relief from autonomic and mental disturbances as completely as is the case with natural estrogen therapy. None of the women treated have been in a state of involutional melancholia requiring institutional care. No objective tests for liver, kidney or bone marrow function are included in this study, but nothing about the clinical course has suggested damage to these organs. Anemia has not been a feature of the toxic manifestations. Extended studies of long time use of stilbestrol seem indicated, with tests of renal and hepatic function before and after the drug is administered.

DISCUSSION

DR. C. M. MACBRYDE, St. Louis: I can report observations which confirm in all essentials those reported by Dr. Sevringhaus. Eight months ago I started studies on diethylstilbestrol, and I have to date studied the results of treatment in thirty-seven cases of hypo-ovarianism. Each patient has been treated for at least one month, and several have been treated for eight months continuously. Of the thirty-seven patients twelve had had both ovaries removed and five part but not all of the ovarian tissue removed, five patients were of eunuchoid type with marked hypogonadism and amenorrhea, and fifteen were patients with severe symptoms of the spontaneous menopause. Diethylstilbestrol proved to be a potent estrogen when given either parenterally or orally. I have followed the vaginal smears at weekly intervals in a large number of cases and have found that estrous changes can be produced at will. The endometrium also shows definite effects as demonstrated by biopsies taken at intervals. In some instances the estrus effects can be obtained with only a few tenths of a milligram a day, and in others it takes several milligrams daily. The largest dose used was 5 mg. daily by injection. Minor toxic effects were noted in a small number of cases. I have not observed the high incidence of toxic effects which have been reported by some observers. Nausea occurred in about 20 per cent of the series and vomiting in three cases, but these symptoms ceased when the dose was reduced. To two patients the preparation has been administered in daily doses of 5 mg. by injection for six months without any signs of toxicity. The average dose employed in the series was 1 mg. by mouth or by injection daily. No cutaneous reactions were observed. No evidence of renal damage as shown by repeated urine examinations was observed. Repeated estimations of red blood cells, white blood cells, platelets and hemoglobin during and after treatment showed no variations from normal. Liver function studies have been performed in a few cases in which the largest doses were administered and treatment was given for the longest periods. So far I have failed to find any evidence of disturbed hepatic function. The tests employed were those of bromsulphalein excretion and hippuric acid synthesis. In none of the cases has it been necessary to withdraw the preparation because of toxic manifestations. Nausea occurred after both oral and parenteral treatment but most often after injections. Changing from parenteral to oral treatment or reducing the size of the dose has so far always resulted in cessation of nausea. I have shown that subcutaneous implantation of hard pellets weighing about 100 mg. will give slow absorption with continuous mild estrous effect. The rate of absorption is about 0.1 to 0.2 mg. a day, which is equivalent to from 2,000 to 4,000 international units daily. The material seems to be more effective per milligram absorbed by pellet implantation than by injection or by mouth. These small "artificial ovaries" can be left in place for weeks or months without any untoward local reaction. They may provide a practical method for prolonged administration of small amounts of estrogenic material. If a larger dose is desired, several pellets may be implanted. I want to emphasize with Dr. Sevringhaus the possible toxic effect of this material. Animal experiments have shown that very large doses can produce liver damage and can inhibit blood formation and cause bone marrow changes. So far with therapeutic doses no such changes have been observed in patients. Nevertheless, this material should be very carefully studied before its use is widely encouraged.

DR. FRANK N. ALLAN, Boston: I can add confirmation to Dr. Sevringhaus's report with regard to the efficacy of stilbestrol. At the Lahey Clinic we have used it in forty-five cases, and I have analyzed the results in twenty-six. In twenty-four cases there was definite relief of symptoms of the menopause. In two cases treatment was discontinued because of toxic symptoms before there was time to evaluate results. In these cases treatment was begun with 1 mg. daily. In ten cases there were toxic symptoms of some degree; in all the symptoms were mild: nausea, rarely vomiting, abdominal discomfort and malaise. None of these symptoms were serious, but the fact that they have occurred so frequently must make one cautious about indiscriminate use. The material is effective when given orally, by injection and as an inunction. In two cases we have observed decided effects from inunction. Administration orally or by inunction may eliminate the need for intensive treatment by injections, sometimes required with severe menopausal symptoms.

DR. SAMUEL SOSKIN, Chicago: My experiences have been similar to those of Dr. Sevringhaus. A word about toxicity: I have found in a group of thirty cases that two or three showed mild symptoms of nausea and gastrointestinal disturbances with oral doses of 1 mg. daily. I hesitated to increase the dose above that because the dose of 1 mg. a day seemed effective in all cases, although with that dose it may take a few more days to get full relief from symptoms. I was also hesitant because of the vague rumors of toxicity passed around by word of mouth. When I started to study the effect of stilbestrol on liver function I found that in some of the treated women there was an increased retention of bromsulphalein. But when I began to study a control group of women before giving stilbestrol I found that a surprising number had some retention of bromsulphalein. It is therefore unfair to judge the toxicity of the drug by liver function tests unless one studies a sufficient number of women in the same age group before and after administering stilbestrol. I found that some patients who had mild bromsulphalein retention before had greater retention afterward, but those with no retention before treatment apparently suffered no liver damage. We may be dealing with a somewhat toxic material which will affect a damaged liver but with which a normal liver can cope very readily. I would suggest that in further evaluations the liver function be tested before one gives the material as well as after.

DR. PAUL STARR, Chicago: I have been using this material in a small way but am not yet ready to report on my observations. I should like to remind you, however, that physicians went through a horrible experience with dinitrophenol a few years ago although that drug had had the most conscientious animal, laboratory and chemical study before its clinical use. One should not be in such a rush to use a new and complicated substance for treatment of ovarian deficiency. I should

like to hear something more said about prolonged animal study on this material, particularly on the primates, if possible. The potentialities of the chemicals to be derived from this hormonal group are so great that I feel physicians are going ahead too fast.

DR. E. PERRY MCCULLAGH, Cleveland: I wish to add my support to what Dr. Starr has said. It seems obvious from my clinical experience and from that of others that the toxic effects of this new drug lie very close to the effect which one wishes to obtain physiologically. Distinct experimental evidence of its toxicity has been published. Loeser discusses the damaging effects of this substance in animals in an article in the *Klinische Wochenschrift* of March 1939, and, more recently, Selye in the *Canadian Medical Association Journal* has called attention to the effects of diethylstilbestrol on the livers of rats. It is true that large quantities of the substance were used and that other estrogenic compounds are capable of producing similar damage. However, at present, when the treatment of menopausal symptoms is in a relatively satisfactory state, one should always bear in mind the potential danger of this substance. As far as possible, it would be advisable to obtain adequate information about the effects of the material on bone marrow, liver and kidneys, especially in primates, before the drug is used extensively.

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: In reply to the discussion by Drs. Starr and McCullagh, I think there are some interesting situations before us. We want prolonged study of animals treated with this material and we want studies with primates as well as with rodents. That is expensive. There are not many laboratories that have monkeys to be used in this type of study and not many that are willing to spend money on trying something like this, which has large promise and one tremendous advantage over natural estrogen in that it is one-tenth as expensive. Menopausal treatment in use now is too limited; it is limited to those who can afford it, and such substances should be made available to others.

Influence of Testosterone Propionate on Function of Testes

DR. NORRIS J. HECKEL, Chicago: In persons with normal testicular function, daily intramuscular injections of testosterone propionate of 10 to 25 mg. will depress the number of spermatozoa to such an extent that either oligospermia or azoospermia occurs. This depletion of spermatozoa has been observed in fifteen of seventeen patients who were treated for various urologic conditions. However, this effect was only temporary, and when the treatment was discontinued the spermatozoa counts returned to within normal limits. The longest duration of the oligospermia and azoospermia was 119 days. In general, the greater the daily dose of testosterone propionate the more rapidly did sterility develop. That is, with 40 mg. daily the sterility occurred much sooner than with 10 mg.

DISCUSSION

DR. EDWARD H. RYNEARSON, Rochester, Minn.: I should like to ask Dr. Heckel if he feels that one should use testosterone propionate in the treatment of undescended testes in boys and whether he has evidence that it will cause damage to the testes of these boys.

DR. W. O. THOMPSON, Chicago: There are two important applications of these observations. It is obvious that an androgen is of no value in sterility. In the second place it should not be used for any patient who has at least one normal testis because of the danger of damaging the normal testis. For this reason it should not be used in the treatment of undescended testes unless both testes are intra-abdominal. It appears more desirable to use stimulation therapy with gonadotropic material for any person in whom the testis is capable of responding to stimulation.

DR. E. PERRY MCCULLAGH, Cleveland: I wish to make one point in reply to Dr. Thompson. It has not been proved that it is impossible to produce a striking fall in the sperm count by the use of pregnancy urine extracts. This point should be investigated further. So far as is known, the effect of injection of pregnancy urine extracts is produced only by the testis hormones secreted from the stimulated gonads. Under these circumstances it would seem to be a reasonable possibility that large amounts of a patient's own gonadal androgens might have an effect on sperm production similar to that following direct injection of similar androgenic steroids.

DR. ALLAN KENYON, Chicago: I should like to ask Dr. Heckel whether he has had the experience of finding an increased number of sperm cells in the semen of hypogonadic patients who have been treated with this material. I at one time observed a decline in the sperm count of a eunuchoid from 1 to 2 per high power field on repeated examinations to none at all, which is entirely in agreement with the report of Dr. Heckel. However, the matter is not so simple as this because there have been reports of increased numbers of sperm cells in the semen of hypogonadic patients so treated. This apparent paradox is not without parallel in biologic investigations because it has been shown that the decrease in spermatogenesis after hypophysectomy in the rat may be prevented by testosterone, and it has been reported by the Cleveland group that even after post-hypophysectomy atrophy occurs large doses of this material may revive spermatogenesis, while in the normal immature rat the seminiferous epithelium is usually inhibited. There may be varying physiologic states in patients which modify this response. I should like to have Dr. Heckel's remarks on this point.

DR. N. J. HECKEL, Chicago: I believe that too much of this material is used for urologic diseases in which at present there is not enough evidence to justify its indication; for example, benign prostatic hypertrophy, impotence and sterility. The only indication for the use of this material in the treatment of undescended testes is a condition caused by a marked deficiency of male sex hormone, in which the testes cannot be influenced by stimulating therapy (the anterior pituitary-like principle), such as eunuchoidism, genital infantilism and hypogonadism. Concerning the question of whether the number of spermatozoa in those with hypogonadism can be increased, we have observed an increase, and it is possible to see how it might occur. However, one must realize that an increase or decrease of several million spermatozoa does not mean much, because there is an error of at least 10 per cent, possibly more, in the calculation.

Use of Desoxycorticosterone Acetate in Addison's Disease

DRS. E. PERRY MCCULLAGH and E. J. RYAN, Cleveland: The basis of the report is six cases of Addison's disease proved by clinical or x-ray evidence alone, by occurrence of crises or typical abnormalities in sodium and chloride excretion. Treatment with desoxycorticosterone acetate has been carried on for periods of from six to ten months. Clinical benefit has followed the use of this substance in all cases. In two cases the use of the drug together with added sodium chloride and some restriction in potassium intake has resulted in complete symptomatic control. In two cases the symptoms have been much lessened but not completely alleviated, and in two cases in which treatment was less consistent or possibly inadequate, though improvement occurred, the results were only moderately good. In conjunction with other treatment, doses as large as 10 mg. or more a day were necessary before distinct initial improvement was obvious. In all cases weight gain occurred and the blood pressure rose. Blood pressure reached levels of hypertension in five. Plasma sodium and chlorides tend to rise, while high plasma potassium tends to fall, with desoxycorticosterone administration. These values are not always consistent with the clinical condition of the patient. Desoxycorticosterone causes the negative sodium and chloride balance of Addison's disease to revert to normal, and hemoconcentration is corrected by it. No change in pulse, temperature, pigmentation, or dextrose tolerance has been observed as a result of this substance. Arterial hypertension and massive edema may appear as evidences of overdosage. It has been observed that patients with Addison's disease may have arterial hypertension, as a result of the use of the drug, and yet not be free from symptoms of adrenal deficiency. Under such

circumstances, adequate doses of adrenal cortex extract may relieve these symptoms and withdrawal allow their recurrence. Withdrawal of desoxycorticosterone was associated in one case with outspoken symptoms of adrenal failure, while the blood pressure was maintained at levels much above pretreatment range. Desoxycorticosterone may cause a marked shift in chloride and water retention without a parallel improvement in symptoms, and, under the same circumstances, symptomatic benefit may follow the use of adequate doses of cortical extract without a further significant change in chloride or water balance. These observations are considered to be evidence of the fact that administration of desoxycorticosterone is not complete replacement therapy. It is advised that complete dependence should not be placed in this drug to the exclusion of the use of cortical extracts in the management of Addison's disease, especially when symptoms are incompletely controlled or in the presence of crises.

Treatment of Addison's Disease with Desoxycorticosterone Acetate

DRS. W. O. THOMPSON, PHEBE K. THOMPSON, S. G. TAYLOR III and W. S. HOFFMAN, Chicago: In our experience most reports on the efficacy of desoxycorticosterone acetate are overenthusiastic. We believe this state of affairs has been caused by (1) too short periods of observation and (2) combining the administration of synthetic material with that of sodium salts so that it is difficult or impossible to determine which produced the beneficial effects. The only real test of potency of any product in Addison's disease is its ability to substitute completely for the adrenal cortex without any other form of therapy. The natural history of Addison's disease with its spontaneous remissions and relapses is too often ignored in evaluating therapeutic agents. Observations must cover a long period of time. During a period of remission, a dose of adrenal cortex extract or of desoxycorticosterone may appear to be effective even though it is inadequate to prevent the periodic appearance of crises. We have been unable to confirm Thorn's observation that 1 mg. of desoxycorticosterone acetate is equivalent to 3 cc. of Wilson's adrenal cortex extract but find that 1 mg. is equal to less than 1 cc. of extract. In severe cases of the disease, 30 mg. daily is an inadequate dose when given as the only form of therapy. There appears to be some question as to whether it will substitute completely for the adrenal cortex. Two of our patients died suddenly while receiving the synthetic material, and in two foot drop developed during the course of treatment. At least another year and probably more will be required before the status of desoxycorticosterone acetate is precisely determined.

DISCUSSION

DR. E. J. KEPLER, Rochester, Minn.: I should like to reenforce what Dr. Thompson has said. Treatment of Addison's disease is difficult to evaluate. A number of patients do well without any medical attention. I recently saw a patient who had had Addison's disease for at least five years. She had a fondness for table salt and had acquired the habit of eating a tablespoonful of salt daily. This patient sought medical advice largely because of the increasing pigmentation of the skin. Furthermore, there are two, and often three, variables to consider in the appraisal of therapeutic measures for Addison's disease, namely the intake of electrolytes, the effectiveness of replacement therapy and finally the extent and activity of tuberculosis in the body if the adrenal insufficiency (as is often the case) is the result of adrenal tuberculosis. Therefore when dealing with such a complicated problem one should be reluctant to accept conclusions based on short term observations, especially when some patients will get along well without any systematic treatment whatever. Our experience at the Mayo Clinic with desoxycorticosterone acetate has not been altogether satisfactory. Within a comparatively short time we have had five deaths, and there is reason to believe that desoxycorticosterone acetate was implicated in these deaths. This drug did not prevent crises from occurring in two of these five cases. In one case there is considerable evidence to suggest that the fatal outcome was the result of overtreatment. There is the possibility that as yet we have not learned to use this drug to the best advantage. In any event, I do not believe that the drug should be used except by the experimental therapeutist. As far as the work of Dr. McCullagh is concerned, we have sufficient unpublished data to confirm what he has said concerning the capacity of desoxycorticosterone acetate to elevate the blood pressure, to cause retention of sodium and chloride and to produce edema.

DR. SAMUEL SOSKIN, Chicago: There can be no doubt that there is a difference in the effects of desoxycorticosterone and adrenal cortex extract. I think to clear the atmosphere it might be well to ask both authors this: How many patients with Addison's disease, whether treated with cortical extract or desoxycorticosterone with salt or without salt, have been treated for a period of a year and still survive at the present time?

DR. EDWARD RYNEARSON, Rochester, Minn.: Concerning the cases of crisis mentioned by Dr. Kepler, I may add that in two of them marked anasarca developed. In one case, autopsy disclosed 1,500 cc. of fluid in each thoracic cavity, marked abdominal ascites and generalized edema. One might say that this is not the right type of case; that this drug is intended for use in milder cases. One of our patients first came to us in 1913 at the age of 15 years with acute tuberculous peritonitis. She returned in 1934 with a four months history of Addison's disease. Treatment was prescribed, using 6 cc. of cortical extract a day with the addition of salt. In 1936 she entered in crisis, from which she was rescued. In 1939 the same thing occurred. During the interval she was in good health and could continue her normal activities. Sept. 11, 1939, 368 mg. of desoxycorticosterone acetate was implanted subcutaneously. She felt well and came back on October 10 for reexamination, which showed her condition to be satisfactory. Sixteen days later sore throat developed, but her condition was not grave. The following morning she was found unconscious with a temperature of 106 F. She was given cortical extract and brought to Rochester. She arrived at 6:30 p. m. and in spite of energetic treatment she died at 4:30 the following morning. I was present some years ago when Dr. Rowntree first administered cortical hormone to a patient with Addison's disease. I am sure many of you remember how encouraged we were for we felt that this hormone might prove as effective in the treatment of Addison's disease as insulin had proved in the treatment of diabetes mellitus. We have been greatly disappointed. Our hopes were again raised when the use of this new synthetic hormone was announced. Again we are disappointed.

DR. E. PERRY MCCULLAGH, Cleveland: I cannot name offhand the number of patients who have gone for more than a year with or without treatment, but it is known that patients live a long time with Addison's disease without any particular treatment at all. One patient came to me with marked leukoderma, which was found to be due to Addison's disease. The leukoderma had existed for fourteen years before treatment for Addison's disease was started. I can agree with Dr. Thompson that we still do not have the ideal treatment of Addison's disease.

DR. W. O. THOMPSON, Chicago: The first patient to whom we administered adrenal cortex extract was first treated in February 1935. When first seen she weighed 75 pounds (34 Kg.) and she now weighs 125 pounds (57 Kg.). She does all her own housework and is but little handicapped by Addison's disease. Among our patients receiving cortical extract there have been three deaths but none in the last three years. We thought it was because of inadequate treatment that death ensued. We give enormous doses in crises and much larger doses than most observers for maintenance. In contrast to these results with cortical extract, two of five patients receiving desoxycorticosterone acetate in the past six months have died.

Low Plasma Potassium and Alkalosis of a Patient with Cushing's Syndrome

DRS. D. M. WILLSON, M. H. POWER and E. J. KEPLER, Rochester, Minn.: After simultaneous administration of potassium and ammonium chloride there was a marked positive potassium balance and the electrolyte pattern of the plasma

became normal. Later the administration of potassium citrate alone was followed by an increase in potassium but also by a decrease in the bicarborate of the plasma, whereas administration of ammonium chloride was followed by a decrease in plasma potassium and, in turn, by a decrease in chloride and a trend toward alkalosis. The response to administration of these salts and the magnitude of the potassium retention in this case suggest that the potassium metabolism was at fault, possibly as the result of hyperfunction of the adrenal cortices.

DISCUSSION

DR. E. J. KEPLER, Rochester, Minn.: I should like to comment on the use of the term "Cushing's syndrome." A few years ago Kessel made the suggestion that the clinical features that Cushing had called attention to should be called Cushing's syndrome, regardless of etiology. He further suggested that cases of Cushing's syndrome that resulted from basophilic cell tumor of the pituitary should be called Cushing's disease. We have adopted that terminology in this paper. The history of the condition Dr. Willson presented is interesting. In 1932 Cushing published a description of pituitary basophilism in THE JOURNAL. At that time Dr. Frank Allen, who was then associated with the Mayo Clinic, and I had under observation a patient who had the clinical features that Cushing had just described. In addition this patient had severe diabetes. As a routine procedure we determined the carbon dioxide combining power of the blood and to our surprise found it abnormally high. This patient remained under observation for a number of months and ultimately died. During the course of the disease the carbon dioxide combining power continued at a high level and at one time was as high as 110 volumes per cent. None of the factors that ordinarily give rise to alkalosis, such as vomiting, diarrhea, ingestion of alkalis or hyperventilation, were present. That was the first case of Cushing's syndrome that we saw. We looked for other cases of this type. Of some thirty cases of adrenal tumor or Cushing's disease we have encountered only three have shown any abnormality of the electrolyte pattern of the blood. As to the significance of the data presented, I am not in a position to draw unequivocal conclusions. It appears that potassium is implicated in the production of the alkalosis and that potassium ions can correct the electrolyte pattern without changing the course of the disease. Whether or not this observation implies that the adrenal cortex is hyperfunctioning I do not know, but the recent studies that were presented at this meeting on the action of desoxycorticosterone acetate suggest that such may be the case.

DR. W. S. HOFFMAN, Chicago: A few years ago I made a survey of the potassium concentration in blood serum. At that time we seldom found wide deviations of the potassium concentration from the normal level of 18 to 22 mg. per hundred cubic centimeters. A drop to a value of 12 mg. per hundred cubic centimeters occurred only once, in a patient who had just been given an injection of epinephrine. Unfortunately at that time we had no cases of Addison's disease or Cushing's syndrome to study. Serum potassium levels as low as 10 to 11 mg. per hundred cubic centimeters in Cushing's syndrome seem unusual, but we can confirm these results by showing that patients with Addison's disease who have received an adequate amount of cortical therapy and salt frequently show such low potassium levels. In fact, such patients show an electrolyte pattern similar to that reported here for Cushing's syndrome. It is difficult to evaluate this low serum potassium concentration both in cases of Cushing's syndrome or in cases of adequately treated Addison's disease. It must be significant, but I doubt whether the change in potassium concentration is primary or that it in any way accounts for the symptoms found.

DR. E. J. KEPLER, Rochester, Minn.: I did not mean to imply that the behavior of potassium was responsible in any manner for the major symptoms of Cushing's syndrome. It has nothing to do with the disturbances of the sexual characteristics. There are three essentials in the chemical picture that has been described: a low concentration of plasma potassium, a low concentration of plasma chlorides and high carbon dioxide combining power. Which of these essentials is the primary factor is difficult to determine. The features are not exactly what one might expect to result from a hyperfunctioning adrenal cortical lesion, since low values for the plasma chlorides also occur with considerable regularity in cases of adrenal insufficiency.

Pancreatic Secretion Following Stimulation with Secretin and Acetyl-Beta-Methylcholine Chloride (Mecholyl Chloride)

MANDRED W. COMFORT, M.D., and ARNOLD E. OSTERBERG, PH.D., Rochester, Minn.: The volume of duodenal content, the hydrogen ion concentration of duodenal content and enzymatic values have been determined in work with thirteen normal persons both before and after stimulation of pancreatic secretion with secretin and acetyl-beta-methylcholine chloride (mecholyl chloride). Secretin and mecholyl chloride produced contrasting effects on pancreatic secretion. Secretin produced a large volume of pancreatic juice, increased the hydrogen ion concentration and total quantity of enzymes excreted but produced a prolonged reduction in the concentration of enzymes. Mecholyl chloride, on the other hand, increased the volume of pancreatic juice only slightly, did not appreciably affect the hydrogen ion concentration but did provoke prolonged increase in the concentration of enzymes and increased the total output of enzymes. Secretin and mecholyl chloride are satisfactory agents for the clinical study of the humeral and nervous mechanisms controlling the pancreatic secretion of man.

DISCUSSION

DR. ANDREW C. IVY, Chicago: This is obviously a good piece of work. I desire to make two suggestions for the discussion: the first is to mention what is known about the psychic secretion of pancreatic juice, and the second is to discuss the possible usefulness of secretin. When the psychic secretion of gastric juice is collected from a dog, from 30 to 60 cc. is obtained. When a human being is sham fed, from 100 to 200 cc. of gastric juice is collected. The juice collected after sham feeding is more concentrated in enzymes than the juice obtained after the injection of histamine. In the case of the pancreas, when a dog with a pancreatic fistula is sham fed, from 3 to 7 cc. of pancreatic juice is obtained, a relatively small amount. I mention that because I doubt whether the nervous secretion of pancreatic juice is very important and because sham feeding is more of a physiologic stimulus than pilocarpine or mecholyl. As far as I know, the effect of sham feeding on pancreatic secretion of the human being has not been determined. The pancreatic juice one obtains from sham feeding is rich in enzymes, but the total output of enzymes does not amount to much. I picture the effect of the vagus nerve on pancreatic secretion when we eat a meal in this way: Vagal impulse affects the zymogen granules in the cell in such a way as to facilitate their solution; then secretin acts to wash these more soluble zymogen products out of the cell. In a normal pancreatic response to a meal both the nervous and the secretin effect operate. What about the usefulness of secretin? Several years ago, when we injected secretin into twenty-six normal medical students, there were three subjects who put out a relatively small total quantity of enzymes. We suspected in them a pancreatic deficiency, so we fed those students a modified Schmitt diet containing 250 Gm. of rare beef tenderloin and 60 cc. of olive oil. We found meat fibers and oil in the stools of all three subjects. The analysis of the stools gave us as much information then as the use of secretin. However, I believe secretin will be used in the diagnosis of absolute pancreatic insufficiency in the same way that histamine is used for such a diagnosis in the case of the stomach at present. The use of secretin may also demonstrate that one enzyme is deficient whereas the others are adequately secreted.

Necrobiosis Lipoidica Diabeticorum

DRS. ALICE HILDEBRAND, HAMILTON MONTGOMERY and E. H. RYNEARSON, Rochester, Minn.: The clinical, pathologic and biochemical observations made in sixty-four cases of necrobiosis lipoidica diabeticorum reported in the literature were reviewed and similar studies made in seven cases seen at the Mayo Clinic were summarized.

Desiccated Hog's Stomach Extract (Ventriculin) in the Treatment of Atrophic Gastritis

DRS. LEON SCHIFF and SANDER GOODMAN, Cincinnati: Five patients with a gastroscopic diagnosis of chronic atrophic gastritis not associated with other gastric disease, anemia, protein deficiency or obvious vitamin deficiency were given desiccated hog's stomach extract (ventriculin) in doses averaging from 30 to 60 Gm. a day. Marked symptomatic improvement occurred and was usually associated with disappearance of the atrophic changes. When the administration of ventriculin was stopped there was usually a return of the gastritic changes which was usually associated with a return of symptoms. These observations suggest that atrophic gastritis may be due to a deficiency of a substance contained in desiccated hog's stomach extract.

DISCUSSION

DR. RUDOLF SCHINDLER, Chicago: This presentation is important because atrophic gastritis is a serious disease not only because of its connection with pernicious anemia and carcinoma but because of its own symptoms, such as weakness and fatigue, which require treatment. Probably not every case of atrophic gastritis is the result of a deficiency. I believe that chronic superficial gastritis may precede formation of a purely inflammatory atrophic gastritis, and it remains doubtful whether they will respond to any treatment. Drs. Palmer and Kirsner and I were able to watch carefully eight cases, and in three the condition did not respond to liver, iron or vitamin therapy. In four cases the gastric mucosa became normal. When the treatment was interrupted, the atrophy returned in two cases. We do not know whether regeneration of gastric mucosa takes place or whether some elements are lacking. Our results are not quite as good as those of Dr. Schiff. It may be that the concentrated liver extract we use is not as potent as the ventriculin. It is worth while to try to treat this disease with substitution therapy, using iron or liver, vitamin or ventriculin.

DR. CLARENCE F. G. BROWN, Chicago: I should like to ask if the authors used gastric mucin in their controls.

DR. E. A. SHARP, Detroit: I believe that the evidence accumulated to show that there is deprivation of some factor may reflect on the lack of information about desiccated hog's stomach. It is known to contain small amounts of vitamin B_2, varying from entire absence to 20 Sherman units per gram. Occasionally this is more concentrated, and sometimes it is absent. Therefore it should be known whether vitamin B_2 was present in the product used and in what amount. With the implication that this deprivation occurs in achlorhydric anemia and that recovery of the mucosa is associated with the administration of ventriculin, I believe further evidence of therapeutic benefit should be accumulated by Dr. Schiff's method and further work should be done on stomach tissue to determine if there is a factor present that we have not considered.

DR. LEON SCHIFF, Cincinnati: We did not use gastric mucin. As to the case in which hydrochloric acid returned, you may recall that this happened a year after treatment was stopped and that the patient failed to relapse after withdrawal of ventriculin. It is therefore possible that the return of hydrochloric acid may have been coincidental. We have naturally been interested in the vitamin content of ventriculin and hope to continue this phase of the problem.

Icterus Complicating Lobar Pneumonia in the Negro

DRS. EDWARD L. TURNER, MICHAEL J. BENT, GUERNEY D. HOLLOWAY and JOHN R. CUFF, Nashville, Tenn.: In a further effort to determine the etiology of icterus in lobar pneumonia and to explain, if possible, the cause of the higher incidence of this complication in Negro patients as compared with white patients, the authors attempted to reproduce and extend Maugeri's experiments. In accord with his studies, rabbits were used as the experimental animal. Insufflations of autogenous blood into the lungs of rabbits produced detectable icterus in only a few of the animals, partially supporting Maugeri's claims. When pneumococci virulent for the rabbit were insufflated into the trachea the animals were overwhelmed too rapidly to produce a picture of pneumonia simulating the human disease. Filtrates of pneumococcus broth cultures combined with autogenous blood when insufflated into the lungs produced tissue changes in the lungs and liver similar to those seen in human lobar pneumonia. This combination, however, failed in most instances to produce a detectable icterus until after experimental impairment of the liver function.

DISCUSSION

DR. ARTHUR A. HOLBROOK, Milwaukee: Reference was made to Eppinger's observations in this condition. In 1938 I had occasion to visit his clinic. One day on ward rounds he presented a case of lobar pneumonia complicated by jaundice. He pointed out that it was his impression that this complicating factor occurred more frequently when the lobar involvement was in the right lower lobe. I should like to ask if any correlation has been made between lobar distribution and the complicating factor of jaundice.

DR. EDWARD L. TURNER, Nashville, Tenn.: We attempted to correlate the lobar distribution and the complicating factor of jaundice and were unable to do so.

Treatment of Amebiasis by a Combined Method (Oral Administration of Carbarsone and Retention Enemas of Chiniofon)

DRS. JOHN G. MATEER, JAMES I. BALTZ, DONALD F. MARION and ROBERT A. HOLLANDS, Detroit: No single known drug, when used alone in treating amebiasis, has yielded more than about 90 per cent permanent cures with a single course of therapy. A group of 104 patients, some with acute involvement and others carriers, have received only one course of combined treatment, consisting of carbarsone by mouth and simultaneous chiniofon retention enemas given according to a special technic. After treatment careful and repeated stool examinations were made in every case over a period varying from six months to three and one-half years; 97 per cent of these patients remained persistently free from amebas. In no case was there any unfavorable drug reaction.

DISCUSSION

DR. ARTHUR J. ATKINSON, Chicago: How large was the cleansing enema and why did you combine oral and enema treatment instead of giving both drugs orally, since most cases of amebiasis begin in the terminal ileum? Perhaps I have been overcautious about using enemas in amebic dysentery, having seen perforation occur after an enema. Some observers have reported perforation after proctoscopic examination.

DR. JOHN G. MATEER, Detroit: The size of the preliminary saline enema was about 750 cc. We are careful not to overdistend the bowel. The complication referred to by Dr. Atkinson has not been seen in our experience. As regards giving these two drugs simultaneously by mouth, this could probably be done, but I do not know whether it would give as high a percentage of successful end results. I think there is an advantage in getting the concentrated chiniofon solution into intimate contact with the mucous membrane of the large bowel, rather than having the drug diluted and mixed with much fecal material.

Intravital Staining of Malignant Neoplasms by Evans Blue

DRS. ALEXANDER BRUNSCHWIG and T. HOWARD CLARKE (Introduced by DR. WALTER L. PALMER), Chicago. Evans blue, a nontoxic electronegative azo dye, an isomer of trypan blue, used in blood volume determinations, was injected intravenously into twenty patients with various forms of malignant neoplastic disease. While the dye stained all tissues diffusely in the doses employed, there was in thirteen of the twenty patients selective concentration of the dye in and about the malignant neoplastic foci.

DISCUSSION

DR. CLARENCE BERNSTEIN, Chicago: Several of these pictures resembled those seen in studies of intravital staining with trypan blue and other similar dyes in which the dye was found to be in the lymphatic capillaries. Was the dye in these tumors found to be localized in lymphatics obstructed by the neoplastic tissue?

DR. ALEXANDER BRUNSCHWIG, Chicago: When seen in and about the neoplastic foci the dye is in the macrophages and fibroblasts of the connective tissue in these areas. The dye does not accumulate in the neoplastic cells themselves.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

18: 647-788 (Dec.) 1939

Speed of Healing of Myocardial Infarction: Study of Pathologic Anatomy in Seventy-Two Cases. G. K. Mallory, P. D. White, Boston, and J. Salcedo-Salgar, Bogota, Colombia.—p. 647.

Combined Syphilitic Aortitis and Rheumatic Disease of Heart: Report of Four Cases. H. Swanson, Nashville, Tenn.—p. 672.

Earliest Correlation of Clinical and Experimental Auricular Fibrillation. M. Block, Ann Arbor, Mich.—p. 684.

*The Electrocardiogram in the Aged: Study of 100 Men and Women Over the Age of 70 with Apparently Normal Hearts. G. Levitt, St. Paul.—p. 692.

Nicotinic Acid: Its Action on Peripheral Vascular System. R. J. Popkin, Los Angeles.—p. 697.

*Incidence of Organic Heart Disease in School Children. Louise W. Rauh, Cincinnati.—p. 705.

Comparative Study of Precordial Leads IV R and IV F. A. J. Geiger, New Haven, Conn.—p. 715.

Roentgenkymography of Heart: Its Clinical Applications and Limitations. R. Gubner, J. H. Crawford, W. A. Smith and H. E. Ungerleider, New York.—p. 729.

Coronary Embolism: Report of Three Cases. C. F. Garvin and J. L. Work, Cleveland.—p. 747.

Electrocardiograms of the Aged.—From the general medical clinic of the University of Minnesota Levitt chose 100 patients (from 71 to 93 years of age) with no evident disease of the cardiovascular-renal system, with the exception of the usual changes in the palpable vessels, after a careful physical examination. A painstaking history also elicited no symptoms of cardiovascular-renal disease. The subjects selected were able to perform such tasks as walking two miles, washing clothes, running a household or performing regular duties of a manual nature without dyspnea. None had attacks of nocturnal dyspnea. All patients stated that they were leading an active life, but at a slowed tempo. The complaints of more than 90 per cent of them were prostatic symptoms, carcinoma of the skin, chronic arthritis or diseases of the eye. Sixty-four were men and thirty-six were women. The electrocardiograms of all of them (based on a criteria of RT or ST segment elevated or depressed more than 1 mm. in relation to the iso-electric line, T waves diphasic, iso-electric or inverted in lead 1 or 2 or both, QRS interval longer than 0.1 second, presence of a Pardee Q_3) showed that the hearts of twenty-six, sixteen men and ten women, were abnormal, according to the foregoing criteria of abnormality. Twenty-three of the remaining seventy-four patients had premature beats. Left axis deviation was present in fifty-nine and right axis deviation in two. Changes in the ventricular complex are not always identified with a diseased myocardium, and myocardial disease is sometimes found when the tracing is normal. However, the electrocardiogram is invariably altered in the presence of severe cardiac muscle damage. Consequently the author states that the pronounced changes found in 26 per cent of his patients should be interpreted with the fact in mind that in rare instances the electrocardiogram is at variance with demonstrable cardiac lesions. He points out that there is sufficient evidence that changes in the electrocardiogram take place normally in the aging heart. These changes include a tendency for the action current to become more horizontal, for the voltage to decline, for the T wave to be lowered and toward an increase in the duration of the QRS and PR intervals. These moderate changes in the electrocardiogram may or may not indicate that cardiac lesions are present. The author does not regard the alterations of his twenty-six patients simply as a part of the process of senescence. It is believed that they represent some abnormality of the heart.

Organic Heart Disease in School Children.—Rauh reports the incidence of organic heart disease in 85,389 children attending 157 Cincinnati schools. These children were examined by school physicians, and 1,782 of them had some clinical suggestion of heart disease. When this group was reexamined by four pediatricians (especially interested in cardiology) 633 were found to have normal hearts, 700 to have murmurs which were believed to be only functional or accidental in type and 449 to have definite evidence of heart disease. This last group consituted 25.4 per cent of the patients selected by the school physicians, or 0.53 per cent of the entire number of children. Of the 449 children with heart disease 304 had definite evidence of organic lesions, 109 were classified as possibly having organic disease but requiring further observation to complete the diagnosis and forty-one had extrasystoles. Of the 304 children with organic lesions, a diagnosis of acquired heart disease, probably rheumatic in origin, was made in 55 per cent and congenital lesions in 45 per cent. Acquired heart disease was more prevalent in the Negro than in the white children. It occurred more frequently in girls than in boys, and more often in children living under poorer economic conditions. The incidence of congenital heart disease was independent of race or sex and was fairly equally distributed among the different age groups studied. A comparison of the results of this study with previous school surveys indicates that there are wide variations of incidence in different localities. The statement that 80 per cent of the acquired lesions are rheumatic in origin is true only in areas in which rheumatic fever is prevalent and severe and cannot be universally employed as a distribution figure.

American Journal of Public Health, New York

29: 1283-1380 (Dec.) 1939

Health for Three Thirds of the Nation. E. S. Godfrey Jr., Albany, N. Y.—p. 1283.

Public Health Aspects of Federal Food, Drug and Cosmetic Act. W. S. Frisbie, Washington, D. C.—p. 1292.

Aspects of Governmental Policy on Stream Pollution Abatement. H. G. Baity, Chapel Hill, N. C.—p. 1297.

Some Essentials in Training for Public Health. A. Gregg, New York. —p. 1308.

The Trained Worker Goes to Work. W. P. Shepard, San Francisco. —p. 1313.

*Development of Tuberculosis in Infected Children. A. S. Pope, P. E. Sartwell and D. Zacks, Boston.—p. 1318.

*Food Poisoning Due to Staphylococci, with Special Reference to Staphylococcus Agglutination by Normal Horse Serum. G. G. Slocum and B. A. Linden, Washington, D. C.—p. 1326.

Premarital and Prenatal Tests for Syphilis in New Jersey. J. Hall, Trenton, N. J.—p. 1331.

Advances in Thiamin Research. A. Arnold, F. D. Baird, Harrison, N. J., and C. A. Elvehjem, Madison, Wis.—p. 1344.

Development of Tuberculosis in Infected Children.—The data that Pope and his associates present were based on the tuberculin tests of 400,000 school children in the Chadwick Clinics between 1924 and 1934, the reexamination of certain groups of these children and the cases of pulmonary tuberculosis subsequently reported in the entire group. The subsequent reported morbidity and mortality from tuberculosis has been determined to the end of 1936 and rates have been computed on the basis of the original reaction. Among the reactors the morbidity from the adult type of tuberculosis has been about four times that in the nonreactors. The death rate has been three times as great in the reactors, and the case fatality essentially the same in the two groups. The cumulative morbidity from tuberculosis in children reexamined annually for from ten to eleven years was more than 6 per cent. This rate was approximately twice as high in girls as in boys and was substantially higher among reactors than among nonreactors. Among reactors it was more than three times as high in those with originally positive roentgenograms. The tuberculosis morbidity among children with a history of a family exposure to the disease was two and a half times that in children without known exposure. Age specific morbidity rates in the series show that significant tuberculosis is infrequent in school children less than 10 years of age and that the incidence rises rapidly after this age, much more rapidly in girls than in boys.

Food Poisoning Due to Staphylococci.—Slocum and Linden discuss the occurrence of twenty outbreaks of food poisoning apparently due to staphylococci, all of which followed the consumption of "ready to eat" hams or tongue. In these twenty outbreaks at least 1,028 individuals were affected. Two deaths occurred, neither of which was attributed directly to food poisoning but to other complicating conditions. In many of the outbreaks there is little evidence to indicate the source of

the staphylococci or when, in the process of manufacture, distribution and handling prior to consumption, the organisms entered the products. The public health problem presented by the staphylococcus food poisoning, incriminating "ready to eat" ham and related salt-cured meat products, appears to be as great as that presented by custard bakery products. A study of thirty-seven strains of staphylococci isolated from food involved in eleven outbreaks demonstrated that the majority of the strains had lost their ability to produce enterotoxin and a positive Stone reaction during storage on laboratory mediums. A fundamental difference between the enterotoxic and nonenterotoxic strains studied seems to be indicated by the fact that they differ markedly in agglutinability by normal horse serum.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

42: 797-950 (Dec.) 1939

Prepyloric Ulcer and Carcinoma. D. A. Sampson and M. C. Sosman, Boston.—p. 797.
Clinical Study of Reactions Following Employment of Pitressin in Cholecystography. B. R. Kirklin and E. E. Seedorf, Rochester, Minn. —p. 811.
Reticulo-Endothelial Neoplasia. R. Paterson and Margaret C. Tod, Manchester, England.—p. 820.
Metastatic Pulmonary Infiltrations of Inflammatory Origin. A. J. Ackermann, Oklahoma City.—p. 828.
Metastases from Carcinoma of Tongue. M. D. Sachs, Portland, Ore. —p. 833.
Spontaneous Amputation of Tongue: Case Report. S. Richman, New York.—p. 843.
Roentgen Pelvimetry: Simplified Method. E. G. Reuter, Portland, Ore., and R. J. Reeves, Durham, N. C.—p. 847.
*Present Status of Roentgen Treatment of Sinus Infections. W. B. Firor and C. A. Waters, Baltimore.—p. 857.
Deep Roentgen Ray Therapy of Mammary Carcinoma: III. Fifteen Year Results in a Formerly Published Group and Statistical Analysis of 1,200 Cases Treated Between 1922 and 1937. W. A. Evans and T. Leucutia, Detroit.—p. 866.
Fracture of Neck of Femur Complicating Roentgen Therapy of Ovarian Cancer. Clara L. Okrainetz and S. B. Biller, New York.—p. 883.
*Radium Therapy in Hodgkin's Disease: Report of Case. C. Sayago, Santiago, Chile.—p. 888.
Malignant Tumors of Tongue: Modified Method of Treatment. von Dollinger da Graça, Rio de Janeiro, Brazil.—p. 890.
Vascularization of Brown-Pearce Rabbit Epithelioma Transplant as Seen in Transparent Ear Chamber. A. G. Ide, N. H. Baker and S. L. Warren, Rochester, N. Y.—p. 891.

Roentgen Treatment of Sinus Infections.—To determine which type of sinusitis is amenable to roentgen therapy, Firor and Waters adopt a classification which has as its basis the various microscopic changes observed in the different stages of the infection. 1. Most cases of acute sinusitis clear up under the usual treatment of inhalations, packing, suction and washings. Because of this, as well as the tension in the affected sinus, roentgen treatment is not indicated. After good drainage has been established, one or two small roentgen doses may hasten convalescence. 2. In subacute sinusitis when examined roentgenologically after washing, the antrums are observed to have extremely thick membranes enclosing a small air space. Unless treated by radical operation or irradiation, they often become chronically infected. The membrane, being filled with lymphocytes and a smaller number of polymorphonuclears, is markedly sensitive to the rays. 3. Cases of chronic sinusitis with thickened membrane, but without polyp formation, are usually due to failure to consult a rhinologist early enough. Others have not been adequately treated or have resisted the usual forms of treatment. This type of sinusitis is also definitely sensitive, being only slightly less so than the subacute group. Microscopic section shows dense infiltration of the submucous area by large numbers of lymphocytes and a moderate number of polymorphonuclear and plasma cells. A favorable reaction to irradiation can be expected because of the cellular infiltration of the submucosa. 4. Chronic sinusitis with much scar tissue or polyp formation constitutes a later developmental type in the course of sinus disease. Because of the presence of scar tissue and relatively little cellular infiltration this group is less sensitive than the preceding, although early scar tissue and polyp formation may be affected moderately by fractional highly filtered radiation, whereas later fibrosis and polyposis is affected but slightly if at all. Microscopic section shows fibrosis with relatively little leukocytic infiltration. 5. Atrophic sinusitis is resistant to the rays. Allergic cases of sinusitis are unlikely to respond to irradiation unless there is associated infection. Lymphoid hyperplasia in the nasopharynx in children in association with thickened sinus membranes responds exceedingly well under irradiation. Good drainage in subacute infections and open ostiums in the chronic group are most desirable. The removal of infected tonsils and adenoids, submucous resections and nasal polypectomies have been found to be of primary importance for permanent relief of this distressing condition. Irradiation is worthy of trial in these difficult cases because many of the sinus membranes contain lymphocytes on microscopic examination. The authors believe that about 70 per cent of properly selected cases of sinusitis can be cured (complete disappearance of symptoms with clear sinuses) or markedly improved (complete disappearance of symptoms with slightly opaque sinuses) by irradiation. The use of prolonged and intensive therapy is not necessary. The authors have had excellent results after four biweekly doses of 100 roentgens each. At times it has been necessary to use 600 roentgens over a period of three weeks to obtain the maximal desirable result. This dose, delivered at 125 kilovolts, 5 milliamperes, 35 cm. focal skin distance and filtered through 4 mm. of aluminum, is about 45 per cent of an erythema dose under these circumstances. Epilation is prevented by covering the hair, eyebrows and eyelashes with strips of lead. In children the dental buds in the maxilla are similarly protected. Fractional doses give the operator better control, tend to avoid possible unpleasant sequelae, such as headache, and will permit the administration of a larger dose should this be necessary.

Radium Therapy in Hodgkin's Disease.—Sayago reports a case of Hodgkin's disease which demonstrates that small quantities of radium, not more than 160 mg., at a distance of from 6 to 7 cm. from the surface of the skin, is enough to produce satisfactory results even in cases in which there are enlarged lymph nodes deep in the chest. The low intensity of radium compared with roentgen radiation is a disadvantage in this application, as the distance to the skin cannot be increased very much unless large quantities of radium are used. In this case a skin distance of not more than 6 cm. was sufficient to cause large nodes situated within the chest to disappear. The nodes within the chest were irradiated through two skin ports, one over the cervical region and the other over the anterior part of the chest. Notwithstanding the great distance from the cervical region to the lower nodes within the chest there was a marked diminution in size before the second application was made.

American Journal of Surgery, New York

47: 1-260 (Jan.) 1940

Postoperative Wound Disruption and Evisceration: Analysis of Thirty-Four Cases with Review of Literature. A. Bowen, Los Angeles.—p. 3.
Superiority of Very Fine Catgut in Gastrointestinal Surgery. J. O. Bower, J. C. Burns and H. A. Mengle, Philadelphia.—p. 20.
Simplification of Physick-Frank-Sellheim Principle of Extraperitoneal Cesarean Section. J. V. Ricci, New York.—p. 33.
Modification in Repair of Complete Laceration of Pelvic Floor. G. L. Moench, New York.—p. 41.
Use of Fascia Lata in Vaginal Surgery. H. Kirschbaum, Detroit.—p. 42.
*Endocrines and Spermatogenesis. R. S. Hotchkiss, New York.—p. 45.
Radiation Treatment of Cancer of Breast. E. Uhlmann, Chicago.—p. 51.
External Lateral Dislocation of Elbow. W. D. Griesemer, Reading, Pa. —p. 57.
Treatment of Shoulder Dislocations. R. L. Peterson, Glasgow, Mont.—p. 71.
Analysis of Results Following Sympathectomy for Peripheral Vascular Disease. G. de Takats, Chicago.—p. 78.
Surgical Treatment of Carcinoma of Pancreas. G. Crile Jr., Cleveland. —p. 87.
Sarcomas of Small Intestine. A. B. Ragins and F. L. Shively Jr., Chicago.—p. 96.
Immediate Surgical versus Expectant Medical Treatment of Clinically Acute Gallbladder Disease. A. Strelinger, Elizabeth, N. J.—p. 105.
*Ammonium Bicarbonate Secreted by Surgical Maggots Stimulates Healing in Purulent Wounds. W. Robinson, Washington, D. C.—p. 111.

Endocrines and Spermatogenesis.—Hotchkiss states that there is evidence of the close relationship of spermatogenesis and the gonadotropic hormones. Appropriate use of gonadotropic substance can cause hyperplasia and hypertrophy of testicular cells in hypophysectomized animals which appear to be closely related to the onset of spermatogenesis in seasonal breeders. Certain seminal deficiencies may be the result of minor infractions of the endocrines, particularly the pituitary. The author has on record several well controlled cases which

have demonstrated gradual but progressive increases in sperm counts following prolonged use of gonadotropic substance. Three cases are presented illustrating improvement coincidental to the use of the gonadotropic principle.

Ammonium Bicarbonate in Wound Healing. — In a further analysis of the secretions of surgical maggots, Robinson found that ammonium bicarbonate is present in comparatively large quantities. In solution ammonium bicarbonate has an alkalinity of *p*H 7.7, corresponding roughly with that of maggot excretions. Wounds treated with maggots tend to have this same alkalinity. Preliminary tests were made with commercial ammonium bicarbonate to determine what effect the pure solution would have when applied to wounds of dogs and rabbits having persistent discharging sores, chiefly on the back and legs. A 2 per cent solution of ammonium carbonate or bicarbonate in sterile water was made up and applied to the wounds in a series of comparative tests. The wounds were thoroughly moistened several times a day with either of these solutions. The wounds healed with the formation of little scar tissue. In later studies with gauze packs saturated with 1 or 2 per cent concentrations of either of the two ammonium compounds, healing was promoted in purulent and indolent wounds. In purulent conditions, such as chronic osteomyelitis, diabetic and varicose ulcers, otitis media and infected lacerations, ammonium bicarbonate solution caused an improvement in the wound similar to that produced by maggots.

American Journal of Tropical Medicine, Baltimore

19: 497-614 (Nov.) 1939. Partial Index

*Clinical Studies in Nondysenteric Intestinal Amebiasis. J. J. Sapero, Panama, Republic of Panama.—p. 497.
Incidence of Human Intestinal Parasite Infections Among Patients in State Institution of Indiana. J. M. Kmecza, Lafayette, Ind.—p. 515.
Effect of Mouse Passage on Cultural Characteristics and Virulence for Mice of Organisms Causing Blastomycosis. R. D. Baker, Durham, N. C.—p. 547.
Dog as a Natural Host for Histoplasma Capsulatum: Report of Case of Histoplasmosis in This Animal. W. A. De Monbreun, assisted by Katherine Anderson, Nashville, Tenn.—p. 565.
Susceptibility of Anopheles Quadrimaculatus to Plasmodium Vivax After Prolonged Insectary Cultivation. M. F. Boyd, Tallahassee, Fla.—p. 593.

Nondysenteric Intestinal Amebiasis. — Sapero investigated only patients with intestinal amebiasis who gave neither a present nor a past history of dysentery. The cases comprised both symptomless carriers of Endamoeba histolytica and infected individuals with complaints of varying severity. Control observations were made whenever feasible. Only those symptoms and signs were ascribed to Endamoeba histolytica after other possible causes had been ruled out. In all, 216 cases of nondysenteric amebiasis were studied, of which 100 were found to show symptoms. A study of the symptomatology of 106 apparently healthy men harboring Endamoeba histolytica showed forty-six, or 43.4 per cent, to have symptoms. A control group of 108 cases negative for intestinal protozoa revealed only eight, or 7.4 per cent, to have complaints. Of the 106 men harboring Endamoeba histolytica only 13.2 per cent had complaints of any appreciable severity. Of 236 individuals harboring various intestinal protozoal species, but not Endamoeba histolytica, the percentage with symptoms was similar to that found in the nonparasitized group, with the exception of Diendamoeba fragilis, as 27.3 per cent of forty-four persons presented symptoms. A study of the blood of sixty-one apparently healthy carriers of Endamoeba histolytica showed no significant differences from the results obtained in a control group of an equal number of individuals not harboring the parasite. Despite the apparent trivial nature of the complaints of the ambulatory group of patients a study of various hospitalized groups showed that a considerable number of nondysenteric amebic infections are severe enough to require hospitalization. In forty-seven such cases the condition was so obscure that only the finding of the parasite in the stool led to the proper diagnosis, and in these specific antiamebic treatment gave good results where other methods had failed. The complaints were primarily referable to the gastrointestinal tract, yet without blood and mucus in the stools and usually without intestinal abnormalities which might suggest an amebic process. Complaints referable to both the upper and the lower gastrointestinal tract appeared with equal frequency. Complaints referable to other systems were seldom encountered. Chronicity, recurrence and mildness of the symptoms were characteristic features. A symptom complex simulating subacute or chronic appendicitis was the most commonly observed syndrome in this series of nondysenteric cases of amebiasis.

American Review of Tuberculosis, New York

40: 607-754 (Dec.) 1939

Tuberculin Test: Its Value and Its Limitations. E. R. Long, Philadelphia.—p. 607.
X-Ray Findings in Tuberculin Reactors and Nonreactors. B. H. Douglas, Detroit.—p. 621.
Tuberculin Test in Control of Tuberculosis. J. A. Doull, Cleveland.—p. 634.
Tuberculin and X-Ray Survey: Observations in Giles County, Tennessee. W. P. Dearing, Montgomery, Ala.—p. 640.
Mass Tuberculin Testing and X-Raying. C. L. Ianne, San Jose, Calif.—p. 654.
Fluoroscopy in Case Finding. J. Rodríguez Pastor, San Juan, Puerto Rico.—p. 657.
*Fateful Periods in Life of Tuberculosis-Infected Individual. J. Holló.—p. 659.
Hematogenic Tuberculosis in the Adult: II. Hematogenic Pulmonary Tuberculosis. E. H. Rubin, New York.—p. 667.
*Basal Tuberculosis. L. F. Busby, Northville, Mich.—p. 692.
Unexpandable Lung: I. Statement of Problem. J. E. Farber and N. S. Lincoln, Mount Morris, N. Y.—p. 704.
Id.: II. Case Reports. J. E. Farber and N. S. Lincoln, Mount Morris, N. Y.—p. 710.
Closed Intrapleural Pneumonolysis. H. A. Jones, Tranquille, B. C.—p. 722.
Pleural Sensitivity to Procaine. K. M. Soderstrom, Seattle.—p. 733.

Fateful Periods of Tuberculosis-Infected Individual. —Holló maintains that the fate of the tuberculous individual depends largely on his behavior during certain, usually short, periods of life. Under physiologic conditions, infection with tuberculosis as a rule does not involve serious danger. If, however, resistance is broken by some additional factor infection will progress. In most cases the tuberculosis is the effect of certain factors besides the infection. Malnutrition, overexertion and lack of pure air are the chief catalysts of tuberculosis, to which one may add the lack of hygienic culture, especially in groups living in an infected environment. In the years around the Great War the start of tuberculous disease could but occasionally be traced to some well defined indiscretion in life habits. Now the connection between some harmful influence and the apparent start of the disease is obvious in most cases. Among the events which in the author's experience have given rise to manifest disease or to an exacerbation of a quiescent condition are college examinations, military service, training for athletic competition, mountain climbing, camping, excessive sunbaths, overwork, exhaustion, nursing of a gravely ill parent, love affairs, abortion, childbirths in quick succession, divorce, death in the family, weight reducing cure, tonsillectomy, drastic antisyphilitic treatment and intercurrent diseases. Infancy and senility rather than puberty represent the most susceptible periods for tuberculosis.

Basal Tuberculosis.—Busby says that a review of the literature shows that the outlook for basal tuberculosis is unfavorable. He found that among 3,597 new patients admitted to the Detroit Municipal Tuberculosis Sanatorium 795 were children. Among the adults the lower lobes were involved in 1.8 per cent, while among the children the incidence was about 20 per cent. The adult cases form the basis of the present study. The duration of symptoms before diagnosis or hospitalization in the adult cases varied from two weeks to several years. Although the average duration of symptoms was 5.5 months, the disease of forty was moderately or far advanced, thirty-one had cavitation varying from 1 to 9.5 cm. in diameter and twenty-two showed evidence of spread to the contralateral lung. The time of spread varied from three months to two years, but in the majority it was between three and six months. From a comparison of basal with initial disease in the upper half of the lung in an equal and comparable number of persons, the disease of twenty-two of the former and twelve of the latter spread to the same or to the contralateral lung. From this it appears that basal lesions tend to early and rather large cavity formation and to earlier and more frequent spread than initial lesions in the upper half of the lung. The results in five cases treated with bedrest alone indicate that this therapy is not safe or justified for basal lesions. Six of the eleven patients with moderately advanced involvement who received phrenic surgery alone recovered, while three of eight who received

artificial pneumothorax alone recovered. This suggests that in minimal and moderately advanced involvement crushing of the phrenic nerve might be tried before artificial pneumothorax is induced. In the far advanced cases no benefit was derived from phrenic nerve surgery alone. Of the twenty-two patients receiving pneumothorax alone six recovered, while of the twenty-eight who received both pneumothorax and phrenic surgery twenty-one recovered. This suggests that in far advanced cases artificial pneumothorax should be attempted first with a view to adding phrenic surgery relatively soon. The difference in favorable results warrants the use of both procedures whenever possible. The author states that patients with disease of the lower lobes, when adequately treated, behave much the same as patients with disease elsewhere in the lung.

Annals of Internal Medicine, Lancaster, Pa.

13: 915-1104 (Dec.) 1939

Epidemic Influenza: Studies in Clinical Epidemiology. T. Francis Jr., New York.—p. 915.
Note on Mechanism of Spontaneous Pneumothorax. L. Hamman, Baltimore.—p. 923.
Chancres Studied from the Public Health Point of View. C. W. Clarke, New York.—p. 928.
Clinical Studies in Acidosis and Alkalosis: Use and Abuse of Alkali in States of Bicarbonate Deficiency Due to Renal Acidosis and Sulfanilamide Alkalosis. A. F. Hartmann, St. Louis.—p. 940.
Neurocirculatory Clinic; Summary of Its Activities: I. Peripheral Vascular Disease. G. de Takats, W. C. Beck and Eunice A. Roth, Chicago.—p. 957.
Influence of Vitamin Deficiencies on Other Diseases. J. B. Youmans, Nashville, Tenn.—p. 980.
Experimental and Clinical Observations Relating to Management of Acute Bowel Obstructions. O. H. Wangensteen, Minneapolis.—p. 987.
Histologic Structure of Carcinomas of Stomach and Quality of Gastric Secretions. A. Brunschwig and T. H. Clarke, Chicago.—p. 1001.
Treatment of Pneumococcic Pneumonia: Comparative Study of 351 Patients Treated at the Philadelphia General Hospital. L. Schwartz, H. F. Flippin and W. G. Turnbull, Philadelphia.—p. 1005.
*Picrotoxin in Treatment of Acute Barbiturate Poisoning: Review of Literature with Report of Two Cases. E. C. Reifenstein Jr. and E. C. Reifenstein Sr., Syracuse, N. Y.; with collaboration of J. W. Mignault, Baldwinsville, N. Y., and A. J. Raffaele, Syracuse, N. Y.—p. 1013.
Effect of Gastrectomy on Monkey. R. A. Bussabarger, A. C. Ivy, H. S. Wigodsky and F. D. Gunn, Chicago.—p. 1028.
*Use of Sulfanilamide in Pulmonary Tuberculosis: Preliminary Report. E. B. Freilich, G. C. Coe and N. A. Wien, Chicago.—p. 1042.
Generalized Capillary and Arteriolar Thrombosis: Report of Two Cases with Discussion of Literature. S. Gitlow and C. Goldmark, Bronx, N. Y.—p. 1046.

Influence of Vitamin Deficiencies on Other Diseases.—Youmans reviews the knowledge of the influence of vitamin deficiency on other diseases. From the review it is apparent that there is little reliable scientific evidence of the effect of vitamin deficiencies on disease and therefore little justification for the current widespread use of vitamins as therapeutic agents in a great number of illnesses. This does not mean that such an influence is lacking or that one should neglect the presence of deficiencies and fail to employ such measures as are needed to ensure adequate nutrition. On the contrary there is good reason to believe that vitamin deficiencies occur as complications of many diseases and modify their course and outcome. For the present the influence of vitamin deficiencies must be considered to be that which might reasonably be expected of a poor nutrition generally, without reference to specific and clearly demonstrated effects.

Picrotoxin for Barbiturate Poisoning.—A review of clinical reports of twenty-two cases in which picrotoxin was used indicates to the Reifensteins and their collaborators that picrotoxin, properly employed, is the most successful antidote for barbiturate poisoning. They add two cases to those already recorded. One patient recovered after the ingestion of what they believe is the largest dose of barbital yet reported in a case in which picrotoxin was employed. The first case of acute barbiturism was brought about by the ingestion of 16.3 Gm. (245 grains) of barbital, with recovery after the use of 314 mg. of picrotoxin. The other instance of recovery occurred after the ingestion of from 0.5 to 1 Gm. (7½ to 15 grains) of seconal and the therapeutic use of 24 mg. of picrotoxin.

Sulfanilamide for Pulmonary Tuberculosis.—Because of the controversial experimental background and because they were desirous of determining what effect sulfanilamide would have on a chronic disease, Freilich and his co-workers used it for twenty male and fifteen female patients with moderate and far advanced pulmonary tuberculosis. Treatment with the drug continued from ten to fifteen weeks. The drug was administered orally in 10 grain (0.65 Gm.) doses three times a day, with equivalent amounts of sodium bicarbonate. This was gradually increased to 20 grains (1.3 Gm.) three times a day over a period of one month, and for the ensuing six to ten weeks each patient received this maximal daily dose. No other medication was given, and magnesium sulfate, salicylates and undue exposure to sunlight were carefully avoided. Other than an initial psychic stimulus because something new was being used, the sulfanilamide did not appear to cause any physical or subjective improvement of any of the patients. Toxic headaches were plentiful. Stopping the sulfanilamide caused them to disappear only to recur when the drug was again taken. That this reaction was not of psychogenic origin was established by the fact that when lactose tablets of the same size, shape and color as the sulfanilamide tablets were substituted the headaches did not recur. Cyanosis was common but was of no great significance.

Archives of Dermatology and Syphilology, Chicago

41: 1-192 (Jan.) 1940

Roentgen Dosage in Dermatology Expressed in International Roentgens. G. M. MacKee and A. C. Cipollaro, New York.—p. 1.
Elephantiasis of Lips and of Male Genitalia, with Special Reference to Syphilis and Lymphogranuloma Venereum as Etiologic Factors. E. W. Netherton and G. H. Curtis, Cleveland.—p. 11.
Simplified Complement Fixation Technic for Diagnosis and Treatment of Syphilis: Its Sensitivity and Specificity. R. L. Gilman, F. Boerner and Marguerite Lukens, Philadelphia.—p. 32.
*Effect of Bismuth Therapy on Latent Plumbism: Preliminary Report. E. Epstein, Oakland, Calif.—p. 38.
Chromomycosis of Face: Report of Case and Study of Causative Organism, Phialophora Verrucosa. M. Moore and P. Mapother, St. Louis.—p. 42.
Periphlebitis Nodularis Necrotisans: Attempt at Definition and Classification. P. E. Bechet, New York.—p. 55.
Bullous Eruption Following Sulfanilamide Therapy. E. Epstein, Oakland, Calif.—p. 61.
*Dangers in Use of Cosmetics. G. L. Wolcott, Asbury Park, N. J.—p. 64.
Inquiry into Cause of Pemphigus: Is It a Virus Disease? F. S. Markham and M. F. Engman Jr., St. Louis.—p. 78.
Absorption of Roentgen Rays by Skin: Experimental Determinations. A. C. Cipollaro and A. Mutscheller, New York.—p. 87.
*Diseases of Nails: Report of Cases of Onycholysis. E. C. Fox, Dallas, Texas.—p. 98.
Urinary Excretion of Indoxyl (as Indican) by Infants with Eczema. H. Sharlit, Margaret M. Klumpp, Collaborator, New York.—p. 113.

Bismuth Therapy in Latent Plumbism.—Epstein presents two cases in which a painter and a smelter worker showed signs and symptoms of lead poisoning followed the administration of a bismuth compound in the treatment of a syphilitic infection. It is suggested that bismuth may replace the lead stored in the bones and tend to the mobilization of lead, with the development of such symptoms as cramps and a lead line. Prophylactic treatment of lead poisoning in those exposed to the influence of the metal may decrease the incidence of untoward reactions following bismuth therapy.

Dangers of Cosmetics.—Wolcott reviews selected literature on the composition of and dangers in the use of important cosmetics. The majority of injuries from cosmetics at present belong in the field of allergic dermatoses. The aniline dyes and coal tar derivatives, in particular the paraphenylenediamine group, are the most serious offenders. Hair dyes, especially preparations for the eyelashes, are extremely dangerous. A new field of cosmetic manufacture, that of synthetic perfumes, is giving rise to many dermatoses. Nail polishes, although relatively innocuous, may cause extensive physical disturbance of the nails. Reference is made to the federal Food, Drug and Cosmetic Act of 1938, designed to regulate interstate and foreign commerce in these items. It is unfortunate that the law does not require listing of ingredients on the label, because in this manner potentially dangerous substances would be known to the consumer and, secondarily, racketeering prices for ingredients of low actual cost would be reduced.

Diseases of Nails.—Fox says there is evidence that diseases of the nails, excluding the pyogenic and fungous infections and changes associated with the inflammatory dermatoses, are often produced by endocrine dysfunction, particularly hypothyroidism and hypopituitarism. Systemic diseases, such as the anemias, avitaminosis and the endocrine disturbances, may present important changes of the nails. This report is based on the study of thirty cases of onycholysis. Of the thirty patients, twenty-eight were women and two were men. Twenty-seven had multiple

separations and three had separation of a single nail. Twenty had low basal metabolic rates and fifteen of these had other symptoms suggesting hypothyroidism, such as a tendency to gain weight easily, a requirement of eight to ten hours' sleep, easy fatigability, excessive susceptibility to cold weather, dryness of the skin and hair and brittle nails. Several had winter pruritus (pruritus hiemalis), with dryness of the skin over the entire body and in cool weather annoying itching, which was aggravated by frequent bathing. One patient had psoriasis of the elbows but there was no evidence of psoriasis of the nails; another had lichen planus without any inflammatory process of the nails, and one had recovered from lichen planus several months previously. Twenty-one showed improvement on thyroid medication, three did not improve and three were not observed for a sufficient period to determine the final results. The author tabulates the data in his thirty cases and then reviews the literature on the concurrence of abnormality of the nails with disorders of the thyroid and other endocrine dysfunctions. He concludes that the influence of the hormones on the development of the skin and its appendages should receive more consideration from the dermatologist.

Archives of Physical Therapy, Chicago

20: 721-784 (Dec.) 1939

Post-Traumatic Painful Atrophy of Joints. R. K. Ghormley, Rochester, Minn.—p. 725.
Electrical Potential Distribution in Phantoms at Low and High Frequencies. A. Kolin and F. T. Woodbury, New York.—p. 732.
Galvanism in Treatment of Bronchial Strictures. J. D. Kernan and D. C. Baker Jr., New York.—p. 739.
Modern Concepts of Prophylactic and Corrective Exercises. J. Weiss and H. J. Behrend, New York.—p. 746.
Standards for Physical Therapy and Occupational Therapy Departments in a General Hospital. M. T. MacEachern, Chicago.—p. 753.

Archives of Surgery, Chicago

40: 1-160 (Jan.) 1940

Successful Autotransplantation of Adrenal Gland in Dog. J. L. Keeley, J. E. Dunphy, T. B. Quigley and J. F. Bell, Boston.—p. 1.
Mastectomy: Clinical Pathologic Study Demonstrating Why Most Mastectomies Result in Incomplete Removal of Mammary Gland. N. F. Hicken, Salt Lake City.—p. 6.
Infection as Cause of Massive Hemorrhage in Chronic Peptic Ulcer: Report of Five Cases. J. R. Lisa and D. S. Likely, New York.—p. 15.
*Cerebral Complications Following Surgical Operation: I. Etiology and Pathology. A. Behrend and Helena E. Riggs, Philadelphia.—p. 24.
Tissue Metabolism and Phosphatase Activity in Early Callus. J. P. Tollman, Omaha; D. H. Drummond, Dayton, Ohio; A. R. McIntyre and J. D. Bisgard, Omaha.—p. 43.
Phosphatase Activity of Infected Fractures. D. H. Drummond, Dayton, Ohio; J. P. Tollman, J. D. Bisgard and D. Ross, Omaha.—p. 49.
Carpus, with Reference to Fractured Navicular Bone. E. F. Cave, Boston.—p. 54.
Aberrant Adrenal Tumor of Upper Part of Abdomen: Report of Case with Six Year Cure. S. F. MacMillan and J. B. Gilbert, Schenectady, N. Y.—p. 77.
*Carcinoma of Rectum and of Rectosigmoid in the Young. C. W. Mayo and G. F. Madding, Rochester, Minn.—p. 83.
Ankle Fusion for Correction of Paralytic Drop Foot and Calcaneus Deformities. B. B. King, New York.—p. 90.
Experimental Goiter Due to Calcium. C. A. Hellwig, Wichita, Kan.—p. 98.
Etiology of Stone in Common Bile Duct. R. F. Carter, C. H. Greene, J. R. Twiss and R. Holtz, New York.—p. 103.
Lymphosarcoma of Stomach. G. F. Madding and W. Walters, Rochester, Minn.—p. 120.
Primary Carcinoma of Terminal Portion of Common Bile Duct. B. Pines and J. Rabinovitch, Brooklyn.—p. 135.
Severe Hemorrhage in Gastric and in Duodenal Ulcer: Study of Ninety Cases. C. W. Holman, New York.—p. 150.

Cerebral Complications Following Surgery.—Behrend and Riggs show that the various cerebral complications encountered after surgical operation may be the result of cerebral anoxia resulting from acute general circulatory collapse precipitated by the anesthetic, plus the trauma of operation, in persons whose margin of circulatory reserve has been reduced by a masked chronic circulatory insufficiency. The brain and viscera of twenty-one patients dying after operation at the Philadelphia General Hospital have been examined. In each case symptoms referable to the cerebrum complicated the postoperative course. Preoperatively only six of the patients could be considered poor surgical or anesthetic risks. The diversity of symptoms reported by other observers is a strong argument against the theory of cerebral vascular accident. In the twenty-one cases the symptoms (psychic disturbances, prolonged coma, convulsions, focal paralyses and death during operation) were usually those suggesting diffuse involvement of the entire brain and, as a rule, at some period more than one symptom was present in each case. Fourteen of the patients in the series surviving longer than twelve hours died with hyperpyrexia unexplainable on an infectious basis. Gross inspection of the brains of the twenty-one patients lent no support to the theory of infarction as a result of embolism. Microscopically, Courville's theory of widespread cellular degeneration throughout the brain, regardless of the type of clinical manifestation of cerebral involvement, was confirmed. Generalized capillary damage with widespread parenchymatous degeneration due to pericellular and interstitial edema was present in every case. Although the edema due to capillary damage was universal, the cellular degeneration was most marked in the association areas of the cortex, the sympathetic ganglions in the gray matter around the third and fourth ventricles and lenticular nucleus, the dentate and Purkinje cells of the cerebellum and the region of the inferior olive in the medulla. As these are the areas that Chornyak found most severely affected in animals subjected to atmospheres deficient in oxygen, this would further suggest that Courville's theory of asphyxia as a factor in the production of cerebral symptoms after anesthesia might be extended to include not only nitrous oxide anesthesia but all forms of anesthesia. Patients who survived less than forty-eight hours showed no evidence of reaction indicating attempted repair. Eight of the ten patients who survived from two to nine days showed focal areas of glial and phagocytic activity, suggesting beginning repair and scar formation. The cerebral symptoms were not related to the duration or type of anesthesia. Since edema and congestion not only of the brain but also of the viscera were observed at necropsy, it would seem that the cerebral degeneration is more reasonably attributable to the combined effect of anesthesia and operation on an impaired general circulatory efficiency with secondary reflection in the brain than to a direct selective anoxia of the brain cells alone.

Rectal Carcinoma in the Young.—The factors which influence the prognosis of carcinoma of the rectum and of the rectosigmoid in persons 30 or less years of age are multiple, although the most important are the ability of the patient to withstand the effects of removal and the presence or absence of metastasis. The latter factor closely parallels the grade of the tumor as classified by Broders. Mayo and Madding review 116 cases of carcinoma of the rectum and of the rectosigmoid in persons 30 or less years of age. Of the patients with grade 1 carcinoma subjected to some form of curative operation, 75 per cent survived the five year period. There was a decrease of 28 per cent for the next grade, and only 10 per cent of the patients with grade 3 tumors survived the five year period. The data support the contention of other reports that carcinoma in young persons is usually of a higher grade than in older persons. Patients with lesions situated low in the rectum for which some form of posterior resection was performed were found to have an average postoperative life of 5.8 years, with an operative mortality of only 2.7 per cent. The combined operative mortality for the entire group treated by resection was 12.3 per cent.

Arkansas Medical Society Journal, Fort Smith

36: 173-196 (Jan.) 1940

Analgesia and Anesthesia in Obstetrics. C. D. Rodgers, Little Rock.—p. 173.
Heart Diseases from Which the Patient May Recover. F. W. Harris, Little Rock.—p. 176.
Study of Bacillary Dysentery. L. D. Massey and Hortense Loucks, Osceola.—p. 180.
The Authority of a Subpena. P. A. Deisch, Helena.—p. 182.

Journal Industrial Hygiene & Toxicology, Baltimore

21: 479-532 (Dec.) 1939

Study of Fate in Organism of Some Chlorinated Hydrocarbons. H. M. Barrett, J. G. Cunningham and J. H. Johnston, Toronto.—p. 479.
Use of Interferometer for Two Component Mixtures. G. C. Harrold and L. E. Gordon, Detroit.—p. 491.
Tissue Reaction to Some Carbon Arc Dusts. E. L. MacQuiddy, J. P. Tollman, L. W. La Towsky and S. Schonberger, Omaha.—p. 498.
Acute Poisoning in Animals After Intraperitoneal and Intratracheal Administration of Dusts. J. P. Tollman, E. L. MacQuiddy and L. W. La Towsky, Omaha.—p. 514.
Distribution of Electric Current in Animal Body: Experimental Investigation of 60 Cycle Alternating Current. A. W. Weeks and L. Alexander, with technical collaboration of R. M. Dennis, Boston.—p. 517.

Journal-Lancet, Minneapolis

59: 521-568 (Dec.) 1939

Management of Traumatic Wounds. C. J. Glaspel, Grafton, N. D.—p. 521.
Repair of Tendons of Hand. H. E. Cleveland, Burlington, Wash.—p. 524.
Rupture and Repair of Ossified Achilles Tendon. H. J. Knott, Seattle.—p. 526.
Coronary Thrombosis. C. B. Wright, Minneapolis.—p. 527.
Treatment for Acute Fractures of Os Calcis. O. W. Yoerg, Minneapolis.—p. 530.
Fractures of Metatarsal Bones. B. J. Branton, Willmar, Minn.—p. 534.
Emergency Ophthalmology. J. E. Reeder, Sioux City, Iowa.—p. 536.
Management of Opacities of Cornea. F. A. Kiehle, Portland, Ore.—p. 537.
*Traumatic Appendicitis. G. N. Pease, Portland, Ore.—p. 539.
Traumatic Rupture of Kidney. A. N. Collins, Duluth, Minn.—p. 541.
Traumatic Rupture of Normal Spleen with Delayed Hemorrhage. R. C. Webb, Minneapolis.—p. 545.
Lordosis Associated with Tetanus. H. E. Wheeler, Spokane, Wash.—p. 548.
Osteomyelitis. A. C. Baker, Fergus Falls, Minn.—p. 550.
Eye Health of College Student. Anette M. Phelan Watson, New York.—p. 552.

Traumatic Appendicitis.—Pease asserts that traumatic appendicitis is a definite clinical entity and as such must be recognized not only by physicians but also by the courts in questions of litigation and compensation. Cases of so-called traumatic appendicitis can be found in the literature. It is nevertheless hard to believe. The trauma of traumatic appendicitis should not be thought of as a direct injury to the appendix as in the case of the liver and spleen but as trauma applied to the abdominal wall and its contents, which consist not only of solid organs but of gas and fluid as well. This means that force can be transmitted in all directions and therefore that the contents of the cecum and even the ascending colon can be forced into the appendix. The appendix can be so distended as a result of this force as possibly to rupture the mucosa and thus offer an avenue for the ever present infectious organisms to invade the wall of the appendix and start an acute inflammatory condition. In the presence of a fecalith in the lumen of the appendix it can be reasoned that this same trauma can cause the fecalith to injure the mucosa of the appendix and thus leave an avenue for a source of infection. This same fecalith or foreign body can block the exit of gas and contents from the appendix and permit swelling and possible perforation to result.

Journal of Pediatrics, St. Louis

15: 745-906 (Dec.) 1939

Electro-Encephalography in Epilepsy. F. A. Gibbs, Boston.—p. 749.
*Cystic Fibrosis of Pancreas, Vitamin A Deficiency and Bronchiectasis. Dorothy H. Andersen, New York.—p. 763.
Etiology of Rheumatic Fever: Discussion. T. D. Jones, Boston.—p. 772.
Diagnosis and Effects of Ligation of Patent Ductus Arteriosus: Report of Eleven Cases. L. T. Bullock, J. C. Jones and F. S. Dolley, Los Angeles.—p. 786.
*Role of Vitamin K in Etiology, Prevention and Treatment of Hemorrhage in Newborn Infant: Part II. W. W. Waddell Jr. and D. Guerry 3d, University, Va.—p. 802.
*Vitamin A Requirements in Infancy as Determined by Dark Adaptation. J. M. Lewis and C. Haig, New York.—p. 812.
Plasma Ascorbic Acid of Infants and Children. C. E. Snelling, Toronto.—p. 824.
Probable Adrenal Insufficiency in Infant: Report of Case. A. M. Butler, R. A. Ross and N. B. Talbot, Boston.—p. 831.
Place of Encephalography in Prognosis in Childhood. J. K. Brines and Elizabeth Lord, Boston.—p. 836.
Arachnodactyly: Report of Case with Autopsy, Including Histologic Examination of Eye. A. C. Rambar and E. J. Denenholz, Chicago.—p. 844.

Cystic Fibrosis of Pancreas.—Andersen states that cystic fibrosis of the pancreas is a disease entity which can be diagnosed with probability on clinical grounds and proved by the assay of pancreatic enzymes in the duodenal juice. The diagnosis may be suggested on the basis of neonatal onset, large foul stools, failure to gain in the presence of a good appetite while taking an adequate diet, a tendency to repeated or chronic respiratory infections and a history of similar disease in siblings. All cases of bronchiectasis or xerophthalmia in infancy should be strongly suspected. As to treatment, the best advice is to give from 20 to 40 per cent more than the estimated calory requirement of a celiac diet and to modify this by the use of whole milk mixed with pancreatin. Vitamin A should be administered generously.

Vitamin K and Hemorrhage.—Waddell and Guerry believe that a direct relation exists between the prothrombin content of the blood and the bleeding that occurs in hemorrhagic disease of the newborn. They report four cases of subclinical hemorrhagic disease and one case of spontaneous bleeding, all successfully treated with vitamin K concentrate. The hypothesis is advanced that marked prothrombin deficiency is the immediate cause of the syndrome known as hemorrhagic disease of the newborn and that subclinical cases without spontaneous bleeding are of frequent occurrence. The same condition of bleeding is probably present at birth and may in fact account for many instances of intracranial hemorrhage associated with normal labor and delivery. It seems that intracranial bleeding associated with normal delivery can be lessened by preventive treatment, that is treating the infant with vitamin K through the mother. The authors have found synthetic vitamin K (2-methyl-1, 4-naphthoquinone) to be efficacious.

Vitamin A and Dark Adaptation.—Lewis and Haig determined the minimal light threshold after complete dark adaptation of fifty-three infants ranging in age from 1½ to 13 months. These infants were on four different diets. The diets were given for periods varying from three to ten months. The results of the dark adaptation tests were within normal limits for all four groups of infants. Thus, infants receiving only from 135 to 200 vitamin A units daily had as low a threshold for vision in the dark as infants receiving an average diet supplemented by 17,000 vitamin A units. It should also be added that the infants in the low vitamin A group gained weight just as well as those in the high vitamin A group and were no more susceptible to infections. As the average diet contains approximately twelve times as many units of vitamin A as were contained in the low vitamin A diet, it is apparent that there is a large margin of safety in the infant's diet with respect to its vitamin A content. Therefore it seems unnecessary to supplement the average diet of infants with special preparations containing vitamin A. Three infants, two of whom had eczema, received as a substitute for milk a proprietary preparation containing soy bean, starch and olive oil. This product is almost devoid of vitamin A. In from three to four weeks these infants manifested poor dark adaptation. The addition of 120 units of vitamin A resulted in normal dark adaptation in two of these infants. When a single large dose of vitamin A, from 30,000 to 50,000 units, was given these two infants who had high threshold values, a prompt response occurred; dark adaptation returned to normal in forty minutes in one infant and in sixty-five minutes in the other infant. In the period during which the three infants on the soy bean diet had poor dark adaptation, they gained well in height and in weight and were no more susceptible to infections than infants receiving large quantities of vitamin A. It is concluded that they had a latent or subclinical form of vitamin A deficiency which became evident only as a result of the dark adaptation tests.

Journal of Thoracic Surgery, St. Louis

9: 119-236 (Dec.) 1939

Two Interesting Benign Lung Tumors of Contradictory Histopathology: Remarks on Necessity for Maintaining Chest Tumor Registry. H. Brunn, San Francisco.—p. 119.
Benign Chondromas of Ribs. F. R. Harper, Denver.—p. 132.
Primary Tumors of Ribs: Report of Eight Cases and Method of Repair of Defect in Chest Wall That Follows Their Removal. R. M. Janes, Toronto.—p. 145.
Pectus Excavatum (Funnel Chest): Anatomic Basis, Surgical Treatment of Incipient Stage in Infancy and Correction of Deformity in Fully Developed Stage. A. L. Brown, San Francisco.—p. 164.
Malignant Tumors of Diaphragm. J. W. Gale and S. R. Edwards, Madison, Wis.—p. 185.
Observations on Effect of Amyl Nitrite on Bronchial Tree. W. F. Nicholson, Cheshire, England.—p. 194.
Surgical Correction of Congenital Atresia of Esophagus with Tracheo-Esophageal Fistula: Case Report. R. Shaw, Dallas, Texas.—p. 213.
Esophagus After Pneumonectomy. H. C. Maier, New York, and A. A. Ehler, Los Angeles.—p. 220.
Lipiodol in Pericardium: Experimental Study. G. E. Lindskog and R. Tennant, New Haven, Conn.—p. 227.

New Jersey Medical Society Journal, Trenton

37: 1-46 (Jan.) 1940

Hemoptysis: Its Causes, Significance and Treatment. B. S. Pollak and S. Cohen, Jersey City.—p. 7.
Use of Roentgen Rays in Treatment of Furuncles and Carbuncles. E. A. May, East Orange.—p. 14.
Influenza and Its Sequelae in Cardiovascular System. C. L. Andrews, Atlantic City.—p. 16.
Successful Treatment of Case of Hypogonadism with Testosterone Propionate. M. Molitch, Atlantic City.—p. 20.
Who Pays the Penalty When the Legal Procedure in Adoption Is Sidestepped? Ellen C. Potter, Trenton.—p. 22.

New York State Journal of Medicine, New York

40: 1-76 (Jan. 1) 1940

Giant Follicle Lymphoblastoma: Benign Variety of Lymphosarcoma. G. Baehr and P. Klemperer, New York.—p. 7.
*Clinical Study of Hypnotics: Effect on Gross Sleep Movements, Length of Sleep, Blood Pressure, Respiratory Rate and Pulse Rate. F. Meyers, E. D. Cook, Buffalo, and R. C. Page, Mount Vernon.—p. 12.
Presenting Certified Milk to the Profession. S. A. Cohen, New York.—p. 20.
Spas: "Have Spas an Essential Place in the National Economy and How Responsible Is Organized Medicine in Its Efforts to Promote and Control Their Activities?" J. Carroll, New York.—p. 23.
Early Recognition of Mental Diseases and Their Treatment. C. O. Cheney, White Plains.—p. 29.
*Role of Burow's Solution in Dermatology. F. C. Combes, New York.—p. 37.
Syphilis in Pregnancy. G. D. Astrachan, New York.—p. 43.
Arsenical Hepatitis. J. R. Scott, New York.—p. 53.
Anterior Poliomyelitis: Relation to Hypertension in Young Adults. H. D. Vickers, Little Falls.—p. 55.

Clinical Study of Hypnotics.—Meyers and his co-workers determined the influence of therapeutic doses of hypnotics on the length of sleep, the time of its onset, the number of gross movements during sleep and changes in pulse rate, respiratory rate and blood pressure. Subjects for the experiments were patients who were free from pain and were not having treatment which might have influenced their sleep. None of these patients received opiates or sedatives as part of their daytime treatment. The subjects received their usual ward routine care during the day, but from 9 p. m. to 8 a. m., and longer when necessary, they were kept in a separate room and were under the constant observation of a nurse especially trained for the study. The two beds used for the experiment were attached to actographs. The drugs used were a placebo, N-tolyl-butyl-ethyl-barbital, neonal, a urea derivative, sodium pentobarbital and sodium amytal. Various doses within the therapeutic range were administered. Each of these drugs was pressed into tablets, all having a similar appearance so that the subjects would not know what medication they were receiving. Twelve patients were studied for a total of 219 nights of observation. Each subject remained in the sleep room for a minimum of fourteen days and a maximum of twenty-six days. The placebos and the hypnotics were given in no definite order but each patient received the placebo at least four times during the course of study. The authors find that the time of onset of sleep was not more rapid after the use of any one hypnotic. The average length of sleep was increased about twenty minutes. The sleep pattern, as measured by the number of gross movements made during sleep, was not changed except in four cases of congestive heart failure. In these instances the hypnotics increased the number of movements during sleep. The pulse rate, respiratory rate and blood pressure in the twelve subjects with normal cardiovascular mechanisms was consistently depressed by the hypnotics, while the four patients with congestive heart failure showed but little change.

Public Health Reports, Washington, D. C.

54: 2159-2194 (Dec. 8) 1939

Comparison of Occupational Class and Physicians' Estimate of Economic Status. Jennie C. Goddard.—p. 2159.
*Effect of Fluorides on Salivary Amylase. F. J. McClure.—p. 2165.
Cultivation of Rickettsia Diaporica in Tissue Culture and in Tissues of Developing Chick Embryos. H. R. Cox and E. J. Bell.—p. 2171.
Relapsing Fever: Ornithodoros Hermsi, a Vector in Colorado. G. E. Davis.—p. 2178.

54: 2195-2238 (Dec. 15) 1939

Unusual Infestation of Ship with Black Widow Spiders.—p. 2195.
Disabling Morbidity Among Employees in Slaughter and Meat Packing Industry, 1930-1934, Inclusive. H. P. Brinton, H. E. Seifert and Elizabeth S. Frasier.—p. 2196.
Rickettsia Diaporica: Recovery of Three Strains from Dermacentor Andersoni Collected in Southeastern Wyoming: Their Identity with Montana Strain I. G. E. Davis.—p. 2219.

Effect of Fluorides on Salivary Amylase.—The fluorides sodium, potassium and ammonium fluoride and fluosilicate were found by McClure to have no effect on the activity of salivary amylase in concentrations varying from 1.7 to 8,550 parts per million of fluorine present in 1:10 dilutions of salivas which stood for one hour in the cold prior to testing of the amylolytic property. The same fluorides when present in the enzyme-substrate mixture during the digestion period, in concentrations varying from 0.76 to 760 parts per million of fluorine in the substrate, had no final effect on enzyme activity. The salivas of school children whose drinking water contained an average of 1.8 parts per million of fluorine showed no differences in amylolytic action from a similar group of salivas obtained under similar conditions from school children whose drinking water was free from fluoride.

Rocky Mountain Medical Journal, Denver

37: 1-72 (Jan.) 1940

Clinical Use of Gastroscopy. R. Schindler, Chicago.—p. 18.
Advertising Claims versus Medical Facts: Blood Tonics. W. A. Rettberg, Denver.—p. 23.
Id.: Cathartics. O. L. Huddleston, Denver.—p. 26.
Id.: Sedatives. C. A. Rymer, Denver.—p. 28.
Id.: Cosmetics. G. M. Frumess, Denver.—p. 31.
Id.: Tobacco. R. T. Terry, Denver.—p. 33.
Role of Medical Profession in Control of False and Misleading Advertising. K. E. Miller, Washington, D. C.—p. 35.
One Year of the Blue Cross Plan. W. S. McNary, Denver.—p. 41.

Southern Medical Journal, Birmingham, Ala.

32: 1171-1264 (Dec.) 1939

Advances in Treatment of Everyday Wounds. B. Douglas, Nashville, Tenn.—p. 1171.
Surgery of So-Called Bilateral Renal Tuberculosis. R. B. Henline, New York.—p. 1185.
Conservative Treatment of Congenital Clubfeet in Infants. L. S. Sell, Oklahoma City.—p. 1199.
Surgical Management of Diverticulitis. C. Rosser, Dallas, Texas.—p. 1203.
Variation in Morphologic Reaction to Injury: Discussion of Certain Aspects of Process of Inflammation, with Special Reference to Large Mononuclear Wandering Cells and Factors Governing Their Response to Injury. W. D. Forbus, Durham, N. C.—p. 1208.
Pneumonia: Medical Treatment. L. J. Moorman, Oklahoma City.—p. 1216.
Treatment of Pneumonia. W. Yeiser, Columbia, Tenn.—p. 1220.
Treatment of Pneumonia in Infancy and Childhood with Sulfapyridine. E. B. Friedenwald and E. S. Bereston, Baltimore.—p. 1223.
Early Roentgenologic Signs in Some of the More Common Disorders of Hip. J. B. Johnson and H. M. Anspach, Galveston, Texas.—p. 1228.
Urologic Determination of Fecundity in the Male. R. J. Holmes, M. M. Coplan and F. M. Woods, Miami, Fla.—p. 1235.
Treatment of Acute Cholecystitis: Immediate or Delayed Surgery. C. E. Clymer, Oklahoma City.—p. 1238.
Pilonidal Cyst. J. P. Wolff, Oklahoma City.—p. 1243.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 661-734 (Dec.) 1939

Avertin Anesthesia for Thyrotoxicosis. E. C. Cutler and S. O. Hoerr, Boston.—p. 661.
Use of Pentothal Sodium in Intravenous Anesthesia. N. E. Hamilton, Portland, Ore.—p. 668.
Choice of Anesthetic Agents and Methods for Surgical Procedures. J. H. Hutton, Portland, Ore.—p. 673.
Safeguarding the Unconscious Operative Patient. T. F. Mullen, San Francisco.—p. 678.
Bronchoscopy in Relation to Thoracic Surgery. P. C. Samson, Oakland, Calif.—p. 687.
*Appendicostomy for Chronic Ulcerative Colitis. G. F. Cushman and A. R. Kilgore, San Francisco.—p. 692.
Treatment of Cancer of Lip. G. S. Sharp, Pasadena, Calif., and H. D. Smith, Los Angeles.—p. 695.
Surgical Approach to Hypertension: Division X. F. M. Findlay, San Diego, Calif.—p. 706.

Appendicostomy for Chronic Ulcerative Colitis.—Compared to ileostomy or colostomy in chronic ulcerative colitis, Cushman and Kilgore state that appendicostomy is an operation carrying little or no risk, it is devoid of the major unpleasant aspects of ileostomy, conserving instead of losing fluid and salts, and it does not interfere with diagnostic studies, medical treatment or even later radical surgery if eventually necessary. From their experience with five cases they believe that appendicostomy should be done as soon as the diagnosis of chronic ulcerative colitis is established. They also believe that it is worth a trial even in late cases before resorting to colectomy. The authors are of the opinion that perhaps an important reason for lack of success with the procedure is the fact that appendicostomy has been done with the object of introducing antiseptics or astringents into the colon. This, they are sure, is in error. Its usefulness lies in keeping the intestine clean and free from the irritation of fecal débris and mucopurulent discharge. It provides rest, as near as may be, short of actual diversion of the fecal stream. The technic of appendicostomy (or cecostomy if the appendix has been removed or obliterated by disease) is simple. Care should be taken to avoid interference with circulation by too great traction on or constriction of the meso-appendix. Two of the authors' five patients, after appendicostomy for chronic ulcerative colitis, have been well for more than five years; three have been free from symptoms for sixteen, eight and six months, respectively. Irrigation should be with tap water or physiologic solution of sodium chloride.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

23: 745-796 (Dec.) 1939

*Underlying Causes of Glaucoma: Including Notes on Lines of Enquiry Which Have Been Pursued, with Suggestions as to Future Research in Clinic and Laboratory. P. J. Evans.—p. 745.

Underlying Causes of Glaucoma.—The hypothesis that Evans advances is that: 1. The causes of primary glaucoma are those of capillary and venous stasis, and the condition arises from the changes resulting from such a disturbance of the local circulation. 2. It is held that the symptom complex known as glaucoma includes a number of separate conditions the only features of which in common are those represented by ultimate decompensation of the mechanism provided for the excretion of fluid from within the eye. 3. It is shown that primary glaucoma or glaucoma simplex is the local manifestation of a general disease. It is well established that acute inflammation does not produce more than a fractional rise of tension. Only in the presence of stasis of the circulation in the capillaries and veins does inflammation produce obstruction. The adhesions produced by repeated attacks of inflammation, particularly those between the lens and the posterior surface of the iris, may however restrict the forward movement of the aqueous from the posterior to the anterior chamber, while the formation of a layer of exudate in the layers of and between the fibers of the suspensory ligament of the lens may prevent the exchange of fluids between the vitreous and the aqueous. In such circumstances increased tension may result from mechanical obstruction and a condition of secondary glaucoma is established. The bowing forward of the aqueous behind the iris in cases of ring synechiae is the expression of the greater amount of fluid derived from the increased vascularity of the choroid and ciliary processes, which constitute by far the greater part of the vascular bed. The increased tension in such cases is relieved by broad iridectomy, which breaks the ring of synechiae and reopens the way between the anterior and posterior chambers. In such cases this procedure results in a permanent cure of increased tension, provided further exudates do not block the iridectomy.

British Medical Journal, London

2: 1173-1214 (Dec. 16) 1939

Clinical Porphyrinuria: Report of Case of Acute Idiopathic Type. F. G. Chandler, G. A. Harrison and C. Rimington.—p. 1173.

Causes of Postpartum Hemorrhage. F. Murray.—p. 1180.

Ophthalmic Injuries from Mustard Gas (Dichlorethyl Sulfide). J. Foster.—p. 1181.

*Rapid Presumptive Serologic Test for Weil's Disease. H. C. Brown.—p. 1183.

*Effect of Heat and Cold on Hemorrhage. S. B. Stoker.—p. 1185.

Rapid Presumptive Test for Weil's Disease.—The test that Brown suggests consists in rocking small quantities of varying dilutions of the patient's serum in the presence of a heavy suspension of Leptospira icterohaemorrhagiae. This saline suspension is formolized to a concentration of 0.2 per cent. As Leptospira cannot be easily thrown down by means of a centrifuge from the fluid medium in which it is grown, the sedimentation of Leptospira from the medium will be facilitated when it is centrifuged by adding to the fluid medium saponin up to a total concentration of 1:1,000. The addition may be made after the culture has been formolized, which makes the procedure free from any risk of infection. Four human strains were compared as regards their agglutinability, both when put up in a water bath for three hours at 56 C. and on the rocking slide. The same serum was used in all cases. The two procedures gave exactly the same titers, but the titers varied according to the strain used. It is thus evident that the strain to be used as an antigen in serologic tests must be highly concentrated and carefully chosen. The dilutions of the serum are made in the depressions of a painter's palette, as in Schüffner's method. They are then mixed with an equal volume of antigen and placed on the slide. This is rocked back and forth for ten minutes, and the result is read by means of a hand lens against a dark background. Numerous serums have been tested by this method and by the macroscopic method after incubation for three hours in a water bath at 56 C. The results have been compared with those obtained with Schüffner's technic and they have been consistently identical, but in every instance Schüffner's technic has given a titer three times higher than that obtained by either of the other methods. The rocking slide method, given a suitable antigen, will produce a result within fifteen minutes of the receipt of the serum and it is reliable enough to justify the administration of curative serum.

Effect of Heat and Cold on Hemorrhage.—By a series of experiments performed as a preliminary to other work on blood coagulation time, Stoker observed that heat shortened bleeding time but cold greatly prolonged it. It is known that the coagulation time of blood is affected by changes of temperature, but the duration of bleeding time appears to be altered more by the effect of temperature on the tissues than on the blood itself. As bleeding is controlled by plugging the damaged vessels with blood clot, the aim of treatment ought to be directed to this end. Heat is obviously the means to attain this rather than cold, which merely narrows the vessels without accelerating the plugging process. Many men, when questioned, recall that they bleed from a shaving cut much longer on a cold winter day than on a warm summer day.

Journal of Mental Science, London

85: 1141-1326 (Nov.) 1939

Maternal Age, Order of Birth and Developmental Abnormalities. L. S. Penrose.—p. 1141.

*Creatinine in Mentally Defective Patients. L. S. Penrose and Caecilia E. M. Pugh.—p. 1151.

Feeding in Infancy and Subsequent Psychologic Difficulties. B. C. F. Rogerson and C. H. Rogerson.—p. 1163.

Interrelations of Mental Defect and Mental Disorder. M. Hayman.—p. 1183.

Relationship of Dementia Praecox to Mental Deficiency. S. G. James.—p. 1194.

Study of Folie à Deux. S. M. Coleman and S. L. Last.—p. 1212.

Prognosis in Schizophrenia: Based on Follow-Up Study of 129 Cases Treated by Ordinary Methods. H. Stalker.—p. 1224.

Wassermann and Meinicke Klärungs Reactions (Original M. K. R. II and Ford Robertson-Colquhoun Modification) in Diagnosis of Syphilis: Analysis of 3,284 Parallel Tests. J. C. Thomas, with note by W. M. F. Robertson.—p. 1241.

*Sulfanilamide Therapy in Bacillary Dysentery. E. Jones and D. W. Abse.—p. 1259.

Creatinine in Mentally Defective Patients.—Penrose and Pugh estimated in duplicate the creatinine and the creatine in more than 500 early morning specimens of urine from almost 300 male and 100 female mentally defective persons. The patients were kept on ordinary institution diet. The results were expressed as creatinine level and ratio of creatine to creatinine. With use of this simple procedure, the following well established observations were apparent: (1) in muscular dystrophy and in diplegia, creatine excretion was greatly increased at the expense of creatinine, (2) in hemiplegia, by contrast, the results were normal, (3) high creatine was found in hyperthyroidism and (4) in children high creatine and low creatinine were found. The authors believed the method to be qualitatively reliable and they made the following further observations: 1. In cerebellar ataxia and in postencephalitic lethargy creatinine excretion was found to be high. 2. Apart from postencephalitis, no abnormality of creatinine-creatine excretion was apparent in psychosis with a mental defect. 3. There appeared to be a slight increase in creatine excretion in congenital syphilis. 4. Mongols and epileptic persons gave normal results. 5. Among endocrine dystrophies, results were irregular and in accordance with the nature of each case. It was observed that slight creatinuria is normal on a diet which contains probably less creatine daily than the usual test dose of the drug, even when the estimation is made on an early morning specimen of urine. There is no significant difference between the average creatine excretion of men and women patients. Owing probably to their greater average size and consequently greater muscle bulk, the average creatinine excretion of men is greater than that of women.

Sulfanilamide for Bacillary Dysentery.—As a result of laboratory experiments, Jones and Abse gave sulfanilamide to twenty-one patients suffering from dysentery caused by the bacillus of Flexner. As soon as the clinical diagnosis was established, two 0.5 Gm. tablets were given three times a day for two days. This was followed by one 0.5 Gm. tablet three times a day for two days, making a total of eighteen tablets. All the patients treated had definite fever, toxemia, abdominal pain and tenesmus. The diagnosis of each case was confirmed bacteriologically by the isolation of the bacillus of Flexner, mostly of the W type. Within twenty-four to forty-eight

hours of the first dose of the drug the temperature fell to normal; shortly after this the passage of stools containing blood and mucus ceased, to be followed by the passage of formed stools from which the bacillus of Flexner could not be isolated. An attempt is now being made to investigate its effect on chronic carriers.

Journal of Physiology, Cambridge

97: 1-132 (Nov.) 1939. Partial Index

Effect of Noxious Agents on Creatine, Creatinine, Chloride and Water Excretion. J. S. L. Browne, S. Karady and H. Selye.—p. 1.
Quick Component of Nystagmus. A. K. McIntyre.—p. 8.
Blood Flow Through Muscle During Sustained Contraction. H. Barcroft and J. L. E. Millen.—p. 17.
Gastric Carbonic Anhydrase. H. W. Davenport.—p. 32.
Effect of Choline on Fatty Liver of Carbon Tetrachloride Poisoning. H. M. Barrett, C. H. Best, D. L. MacLean and Jessie H. Ridout.—p. 103.
Diet and Insulin Content of Pancreas. C. H. Best, R. E. Haist and Jessie H. Ridout.—p. 107.

Lancet, London

2: 1253-1298 (Dec. 16) 1939

Surgery of Common Bile Duct. J. Walton.—p. 1253.
Paraplegic Beriberi: Case. J. B. Young.—p. 1257.
Prevention of Foot Deformities in Children. Margaret Emslie.—p. 1260.
*Fresh and Stored Placental Blood. J. Halbrecht.—p. 1263.
*Sulfapyridine in Lymphopathia Venereum. K. V. Earle.—p. 1265.
Drip Flow Meter for Transfusion. S. R. Gloyne and Phyllis M. Tookey Kerridge.—p. 1267.

Fresh and Stored Placental Blood.—Of the three sources of stored blood (donors, cadavers and placentas) Halbrecht's paper is concerned with the last. Placental blood is easily obtained and easily stored. The pooling of blood for a simple transfusion is an advantage, for it diminishes rather than increases the possibility of a reaction due to incompatibility. In most of his transfusions the author used blood from five or six placentas, and in 220 such transfusions he never saw a severe reaction. Dyspnea was observed in one case and chills in eleven. This incidence of reactions (5 per cent) can be expected also when fresh blood is used. The author discusses the properties of fresh placental blood and the effects of storing. In the summary he stresses that the only chemical change of importance due to storing the blood for a fortnight was glycolysis, increasing from day to day. The chief change in the formed elements of the blood consisted in an almost complete disappearance of the granulocytes after the seventh day. In general the erythrocytes were well preserved; some of them showed from the beginning of the second week changes in form due to shrinking (crab-apple form). The chief physiologic function of the erythrocytes, their power to combine oxygen, was preserved. Slight hemolysis appeared after several days of storing. It was insignificant up to the tenth day and almost never amounted to more than 1 per cent (170 mg. per hundred cubic centimeters) of free hemoglobin in the plasma. On the fifteenth day up to 5 per cent (710 mg. per hundred cubic centimeters) of free hemoglobin was sometimes found in the plasma. In these quantities free hemoglobin does not seem to produce any undesirable effect in the recipient.

Sulfapyridine in Lymphopathia Venereum.—Earle has treated twenty-four cases of lymphopathia venereum (venereal lymphogranuloma) with sulfapyridine. The results have been uniformly successful, as is demonstrated by the twelve clinical histories he reports. This series includes most of the types of venereal lymphogranuloma except gross elephantiasis of the vulva and rectal stricture in the male. The optimal therapeutic stage is during the early days of the inguinal adenitis. When fistulas have formed, treatment is prolonged. In the female the best results are obtained during the stage of adenitis, but even in later stages treatment is of value. In two cases rectal stricture was favorably influenced. A feature of treatment of lymphopathia venereum with sulfapyridine which is worthy of trial is the sterilization of female carriers. These often have no obvious clinical signs but invariably show a positive Frei reaction. The treatment of inmates of brothels in tropical ports, who probably form an important focus for the maintenance of lymphopathia venereum, might be of value in reducing the incidence of infection in the male. The most satisfactory dosage of sulfapyridine in this condition appears to be five or six 0.5 Gm. tablets daily for five days. Depending on the response, additional five day courses can be given at intervals of three or four days.

Presse Médicale, Paris

47: 1609-1624 (Dec. 13-16) 1939

Clinical and Pathogenic Study of Dissociated Jaundice. M. Brulé and J. Cottet.—p. 1609.
Treatment of Complicated Fractures on War Front. J. Creyssel.—p. 1612.
*Diagnosis of Infectious Mononucleosis: Value of Serologic Reactions. R. Demanche.—p. 1614.

Diagnosis of Infectious Mononucleosis.—Demanche reports his experiences with the serologic test (agglutination reaction) devised by Davidsohn and somewhat modified by the author in 239 cases of true and false infectious mononucleosis. One hundred and forty-seven cases, including angina, acute and myeloid leukemia, Hodgkin's disease, lymphadenia, leukemoid manifestations and other abnormalities could be eliminated as simulating the clinical picture. In nearly all these cases the agglutination titer was low, three fourths not exceeding 1:28. In fifty-seven cases presenting the classic picture the agglutination test was positive. White blood cells varied between 10,000 and 20,000 (on one occasion as high as 28,800). The mononuclear cell count ranged from 50 to 80 per cent. All fifty-seven cases, with the exception of eight, showed a titer evaluation ascending from 1:224. The variations in agglutination did not seem to agree either with the intensity of the disease or with that of the leukocytic reaction but were due in part to the time when the tests were made, that is between the eighth and the fifteenth day, rarely earlier. The disease could be identified even when a low agglutination titer was present by the complete absorption by the beef erythrocytes. The author found that serologic modifications were not discoverable at the beginning of the disease but were always present by the eighth day and had reached their acme between the eighth and the fifteenth day. The agglutinating power of the serum diminished rapidly and fell from more than 1:14,000 and 1:28,000 to 1:112 within the space of two months, simultaneously with the reestablishment of the leukocytic equilibrium. The termination of the reaction was signalized by the disappearance of the typical agglutinations and the return of Forssmann's antibodies. The author found the serologic test clearly and constantly positive in all cases of proved infectious mononucleosis except two doubtful ones.

Revue Neurologique, Paris

72: 249-344 (Sept.) 1939

*Generalized Muscular Hypertrophy of Nursling and Congenital Hypothyroidism. H. Darré, P. Mollaret, Mme. Zagdoun and Mlle. Oehmichen.—p. 249.
Muscular Hypertrophy Without Myotonia in Nursling of 7 Months With General Delay of Development by Congenital Hypothyroidism. G. Bourguignon.—p. 282.
Malignant Development of Royal Tumor in Familial Recklinghausen's Disease. R. Huguenin, S. Burgi and J. Barbet.—p. 287.

Muscular Hypertrophy and Hypothyroidism.—Darré and his associates distinguish three different types of generalized muscular hypertrophy in nurslings which they designate by the names of authors who have described them: (1) the syndrome of Debré-Semelaigne, (2) the syndrome of Cornelia de Lange and (3) Thomsen's disease of nurslings. They report the history of an infant with generalized muscular hypertrophy, which involved even the diaphragmatic, gastric and cardiac muscles. The muscular hypertrophy did not show clinical, mechanical or electrical signs of myotonia; it was without concomitant neurologic signs and was definitely congenital but devoid of hereditary or familial character. On the other hand, the infant presented attributes of congenital myxedema. Thyroid was given, at first without effect; later it became effective in that the muscular hypertrophy as well as the signs of hypothyroidism disappeared. The authors also discuss the three aforementioned types of generalized muscular hypertrophy of nurslings. The syndrome of Debré-Semelaigne is characterized in nurslings by the association of generalized muscular hypertrophy, muscular rigidity, retardation in the intellectual development and a myxedematous syndrome. The amelioration of the thyroid deficiency by organotherapy is followed by improvement in the other symptoms. In nurslings with the syndrome of Cornelia de Lange the following triad concurs: generalized muscular hypertrophy, extrapyramidal hypertonia and mental deficiency. The syndrome of Cornelia de Lange has two symptoms (general muscular hypertrophy and mental deficiency) in common with the syndrome of Debré-Semelaigne; the third symptom, the extrapyramidal disturbance, places it at least

provisionally in a special class. Nevertheless the authors think that intense and prolonged treatment with thyroid is advisable even if the examination of the child fails to disclose signs of hypothyroidism. Regarding the syndrome of Debré-Semelaigne, they say that it is already represented by an appreciable number of cases but that its definition should be more precise and that the term congenital myxedema should be replaced by thyroid insufficiency.

Schweizerische medizinische Wochenschrift, Basel

69: 1217-1240 (Dec. 2) 1939. Partial Index

*Hypophysial Tuberculosis as Cause of Death. W. Berblinger.—p. 1217.
Traumatic Tetanus and Other Anaerobic Infections. O. Maier.—p. 1220.
Polyradiculoneuritis Guillain-Barré: Case. Anita Saurer.—p. 1222.
Paroxysmal Attacks of Coughing in Adults as Masked Form of Pertussis. M. E. Bircher.—p. 1226.

Hypophysial Tuberculosis as Cause of Death.—Berblinger reports the case of a woman aged 52 who injured the back of her head in a fall. Convulsions and coma set in and she died. The necropsy disclosed extensive atrophy of the entire hypophysis, the weight of which had shrunk to 0.31 Gm., leaving no distinguishable demarcation between the two lobes. Epithelioid cell tubercles with typical giant cells and caseation were found in what remained of the gland. Likewise a bilateral atrophy of the adrenal cortex, especially in the zona fasciculata, was discovered. In the lower lobe of the left lung were subpleural calcifications and small clarified cavities in the apex of the lung with cicatrices in both apexes and healed endocarditis in the aortic valves. There was almost complete absence of pubic and axillary hair. No external signs of occipital contusions were found nor did microscopic inspection of the brain indicate recent softening, scars or hemorrhages. Authentic proof of hypophysial tuberculosis, the author states, can be furnished only by necropsy. In the absence of this the real cause of a patient's death may escape notice. This may account for the fact that only twenty-one cases have been reported.

Clinica Medica Italiana, Milan

70: 473-540 (Nov.-Dec.) 1939. Partial Index

*Frequency and Significance of Tuberculosis in Rheumatic Fever. M. Pellegrini.—p. 505.
Clinical and Roentgen Aspects of Hypertrophic Gastritis. P. C. Talini and E. Zanetti.—p. 531.

Tuberculosis in Rheumatic Fever.—Pellegrini discusses the frequency and etiologic relations of tuberculosis and rheumatic fever. He made a clinical study of seventy cases of typical rheumatic fever without any symptoms of tuberculosis (either pulmonary or extrapulmonary). The patients were observed during the first acute attack or during a recurrence of the disease. The author found that in thirty-seven cases in the group the repeated x-ray examination of the thorax showed the presence of pleuropulmonary tuberculosis either in evolution or healed. The Mantoux test gave positive results (three plus) in fifteen cases in which pleuropulmonary tuberculosis in evolution was present, in seventeen of twenty-two cases in which there were healed pleuropulmonary tuberculous lesions and in twenty-three of thirty-three cases in which x-ray signs of pleuropulmonary tuberculosis were absent. The author concludes that tuberculosis is frequent in rheumatic fever as an associated infection. The tubercle bacillus is not concerned in the development of rheumatic fever. Mixed tuberculous and rheumatic forms become apparent by predominant (or exclusive) symptoms of either infection. Rheumatic fever has a stimulating action on tuberculous allergy. The stimulation in certain cases results in the development of hyperergic reactions.

Riforma Medica, Naples

55: 1657-1684 (Nov. 25) 1939. Partial Index

*Roentgen Treatment of Hyperfunction of Thymus (Pende's Syndrome). S. Gualco.—p. 1659.

Roentgen Treatment in Hyperfunction of Thymus.—Gualco observed and followed the behavior of the crasis of the blood and of the basal metabolism in twenty-five adolescents who were suffering from adiposity, genital dystrophy and retarded somatic and mental development from hyperfunction of the thymus (the so-called Pende syndrome). The observations were made before and after administration of roentgen irradiations on the thymus region by Pende's technic, which consists in irradiation of 100 roentgens through a filter of 3 mm. of aluminum and 0.5 mm. of copper on the thymus region. The irradiations are given every other day, up to a total number of four for each cycle, which is followed by a period of rest for twenty days during which time the patient has no treatment. The complete treatment consists of three cycles of irradiations. The author found that in all cases the somatic genital and mental disturbances are controlled by the treatment. He also found that before administration of the treatment total absolute and relative lymphomonocytosis and neutropenia and moderate disturbances of the basal metabolism exist which are controlled by the treatment.

Archiv für Gewerbepathologie, Berlin

9: 509-606 (Oct. 30) 1939

Hygienic Aspects of Rock Dust Method Used for Prevention of Coal Dust Explosions. H. Bruns, W. Ceelen and O. Ehrismann.—p. 509.
Results of Examinations of Printers and Helpers Who Work on Machines with Spraying Apparatus. K. Humperdinck.—p. 559.
Experimental Intoxications with Heavy Metals, Thyroid Function and Porphyria. S. Sümegi and J. Putnoky.—p. 566.
*Toxicology, Clinical Aspects and Pathologic Anatomy of Nickel Carbonyl Poisoning. O. Bayer.—p. 592.

Nickel Carbonyl Poisoning.—Bayer says that his clinical experience with carbonyl poisoning corresponds with that of Brandes in America and that reported from a refinery in England. He found that in the majority of cases the symptoms disappear in from eight to fourteen days. The pulmonary symptoms increase and lead to a secondary involvement of the heart and the circulation only in the severe cases, and death follows under the signs of cardiac failure. The necropsy is given in two cases. The author concludes that nickel carbonyl acts as an inhalation toxin on the large surface of the respiratory epithelium and produces the aspects of a toxic pneumonia, with simultaneous involvement of all parts of the lung. It is difficult to explain to what extent the frequent cerebral hemorrhages are caused by absorbed nickel carbonyl or to what extent they may be asphyxiation hemorrhages. The pulmonary symptoms in the form of dyspnea, irritative cough and pains along the costal arches dominate the clinical picture. The pathologic anatomic picture is characterized by a peculiar coagulation process in both lungs. Microscopic examination reveals that the pulmonary alveoli are filled with a fibrin precipitate, whereas cellular blood elements are almost completely missing. In the treatment the author obtained favorable results with the intravenous administration of large quantities of dextrose solution and by medication with calcium, strophanthin and circulatory stimulants of the camphor series.

Deutsche medizinische Wochenschrift, Berlin

65: 1621-1648 (Nov. 3) 1939

"Rheumatic Pains" and Their Treatment. A. Slauck.—p. 1621.
*Granulocytopenia and Vitamin C. H. Kalk.—p. 1624.
Ulcerative Colitis and Anemia. W. Schemensky.—p. 1629.

Granulocytopenia with Vitamin C.—Kalk reports the successful use of ascorbic acid in six cases presenting different disease backgrounds but all characterized by granulocytic deficiency in the leukocytic blood picture. The age of the patients was between 21 and 56 years. The following disease conditions were represented: bilateral glandular swellings of the neck with intrabuccal inflammations and refractory digital lesions of an occupational nature, pyrexia and coma; rheumatism of thirty-five years' standing with icterus, lesions in the scrotum and perineum; dermatitis resembling scarlatina with diarrheal discharges, icterus and stupefaction; chronic polyarthritis rheumatica and signs of myocarditis and endocarditis; bronchopneumonia and thrombosis of the right leg; and lumbago, pains in the upper arms and legs, angina and necrosis at the right palatine arch. The analysis of the white corpuscular blood content disclosed a leukocytic count as low as 2,600 and 3,000, with granulocytopenia at the zero point and lymphocytosis at an elevation of 75 and 92 per cent. Treatment of the patients consisted of intravenous doses of vitamin C varying from 50 mg. to 5 Gm. According to the author, vitamin C therapy, by improving the leukocytic picture, achieved remarkable results and practically saved the life of three patients, besides healing the digital lesions and the inveterate rheumatism. Vitamin C was observed to be capable of causing prompt reactions. In one case reduction of dosage, by administration on alternate days, at once affected the patient unfavorably, whereas restoration to a daily schedule promptly stimulated favorable effects. In spite of the absence or the considerable diminution of granulocytes in the blood stream, the

author classifies his cases among those with a more favorable prognosis because of their relatively high leukocytic count. He regards granulocytopenia as due to delayed maturation or impeded release in the bone marrow. Vitamin C, in his opinion, is prophylactically indicated whenever a disease presents a decrease in leukocytes and granulocytes. He also records the inefficacy of vitamin C therapy in eight cases of myelocytic leukemia, though doses were as high as 1 Gm.

Deutsche Zeitschrift für Chirurgie, Berlin

252: 549-676 (Oct. 24) 1939. Partial Index

*Biology and Hormonal Diagnosis of Malignant Tumors of Testis. K. Ehrhardt and H. Breitenbach.—p. 549.
Atrophic Chronic Thyroiditis Associated with Bilateral Tuberculosis of the Adrenals with Characteristic Manifestations. A. Jentzer and E. Rutishauser.—p. 567.
*Paget's Deforming Osteodystrophy in Light of Experience of Last Ten Years. W. Brunner.—p. 585.
Cancer Problem. L. Heidenhain.—p. 604.
Petrification of Anatomic Preparations. G. Chiurco.—p. 612.
Dilatation of Biliary Passages. M. Grauhan.—p. 614.

Hormonal Diagnosis of Testicular Tumors.—According to Ehrhardt and Breitenbach, an analysis of the urine for the presence of hormones is indicated in every case of testicular disease. A repeatedly positive luteinizing reaction in the urine is diagnostic of a malignant growth of the testis. Diagnostic conclusions are not justified on the basis of a single negative luteinizing reaction. A negative luteinizing reaction and a positive follicle stimulating reaction call for further urinalyses. A repeatedly positive follicle stimulating reaction in the absence of a positive luteinizing reaction is suggestive of a malignant condition of the testis but not decisive. No conclusions are justified on the basis of an occasional positive follicle stimulating reaction. A malignant tumor may be present even though both reactions are negative. Here one must depend entirely on the clinical characteristics of the tumor. A favorable prognosis is indicated when a hitherto positive luteinizing reaction is repeatedly negative after the operations for the removal of the involved testis. The authors suggest that the urine be examined for hormone in every case of gynecomastia because of its frequent association with malignant conditions of the testes. Such examinations would result in recognizing early cases of malignant tumors of the testis. An extragenital chorionepithelioma may give rise to a positive luteinizing reaction in the urine. The authors have reviewed the literature and found that the luteinizing reaction proved positive in the following types of testicular tumor: seminoma, chorionepithelioma, teratoid, carcinoma, disgerminoma, embryoma and adenocarcinoma. Of the nine cases reported by them, three gave a positive luteinizing reaction. The remaining six gave a positive follicle stimulating and a negative luteinizing reaction. Both reactions were negative in a group of nine cases with inflammatory disease of the epididymis.

Paget's Deforming Osteodystrophy.—According to Brunner, there were twenty-six cases of Paget's osteodystrophy observed in the Clairmont clinic (Zurich) in the last ten years. The majority of the patients were admitted to the clinic because of complications. In 70 per cent the diagnosis was arrived at from x-ray examination. Earliest symptoms were noted between the ages of 31 and 65, on the average at 50 years. Prodromal symptoms lasted as a rule about six years before they were recognized by a physician. The relationship of the incidence in men and in women was as 19:17. Familial incidence was observed in only one instance. Seventy per cent of the patients presented rheumatic complaints, 20 per cent pathologic fractures, while 10 per cent were symptom free. Spontaneous fractures were relatively rare and occurred only in cases exhibiting high grade osteoporosis. There were thirteen fractures of the tibia, nine of the femur and pelvis, seven of the humerus, six of the vertebrae, five of the skull, three of the scapula and the fibula, two of the sternum and rib, one of the tarsal bone and one of a phalanx. They have not observed any cases of circumscribed osteoporosis of the skull. All the traumatic fractures, even those in the advanced age, healed satisfactorily. Bony deformities were caused less frequently by the fractures. They were more frequently due to unilateral increase in the growth and to muscle pull. The roentgenologic observations were as a rule typical; genuine cysts were not observed. Roentgenologically the cases had to be differentiated from Recklinghausen's disease, osteomalacia, osteoplastic carcinomatous metastasis and primary latent osteomyelitis. The joints did not appear to be involved. Nervous disturbances as the result of bony encroachment at the exits of the nerves or as the result of pressure on the brain were observed relatively seldom. With a single exception the phosphatase blood content was abnormally increased, corresponding to the severity of the disease. The blood calcium level was never abnormally increased and in one half of the cases was found to be at the lower level of the normal. A mild hyperphosphatemia was frequently observed. There was no increase in the excretion of calcium and potassium in the urine. Nephrolithiasis was never observed. The majority of the cases presented neither hereditary nor constitutional etiologic factors. Trauma as a rule exerted an unfavorable influence. The only endocrinologic disturbances were those of a fairly frequently observed increase in basal metabolic rate, suggesting a functional disturbance of the thyroid gland.

Medizinische Klinik, Berlin

35: 1389-1416 (Oct. 27) 1939. Partial Index

Influence of War Service on Onset, Dissemination and Course of Pulmonary Tuberculosis. O. Schedtler.—p. 1389.
Extrarenal Azotemia. H. Reinwein.—p. 1393.
*Differentiation of Gout and Tuberculosis of Joints. R. Kienböck.—p. 1394.
Some Remarks on Dermatitis Herpetiformis Duhring. G. Stümpke.—p. 1399.
Etiology of Erythema Nodosum. F. Bühler.—p. 1401.

Differentiation of Gout and Tuberculosis.—Kienböck says that in general practice chronic articular disturbances are usually diagnosed as one of the following disorders: chronic articular rheumatism, arthritis deformans or gout. He thinks that x-ray examination should be employed more frequently. He describes five cases of painful nodular disorders of the joints of fingers or toes, some of which presented considerable difficulties in the diagnosis especially in the differentiation between true gout and tuberculosis. He admits that the clinical and roentgenologic aspects of these two disorders are similar in some respects. Both are characterized by pains, articular swellings, redness of the skin and formation of fistulas; x-ray examination occasionally reveals cystic destruction of the bone without or almost without increased density of the bone and with small sequesters and roundish masses. However, there are also some differences: uratic gout is characterized clinically by the well known attacks of pain and by the fact that the fistulas secrete whitish masses, uric acid, which are rarely mixed with pus. The x-ray examination in these cases reveals in the destroyed part of the bone little or no densification; the nodules appear in most cases entirely "light," in rare cases cloudy, secondarily calcified and ossified. Tuberculosis, on the other hand, is characterized by moderate pains; there are no real attacks. The fistulas secrete caseous masses, small sequesters and pus; some of these fistulas are caseated abscesses. The examination with x-rays discloses densification of the bones, and the attached masses are usually cloudy and occasionally contain small sequesters. If made with care, x-ray examination usually permits a correct diagnosis. To be sure, errors do occur. One of the cases which the author identified as gout had previously been diagnosed as chondroma of the bone and again as osteitis fibrosa cystica. In some cases even x-ray examination will not permit a differentiation between gout and tuberculosis, and only an operation will clarify the case. It will reveal either uric acid or tuberculous pus, occasionally with bacilli. Examinations of the urine and of the blood are of value if they produce positive results, but they are of no significance if they produce negative results.

Münchener medizinische Wochenschrift, Munich

86: 1549-1572 (Oct. 27) 1939. Partial Index

Articular Bullet Wounds. G. Magnus.—p. 1549.
*Azosulfamide in Treatment of Cholangitis and Its Experimental Foundation. R. Mancke, K. Plötner and W. Siede.—p. 1550.
Treatment of Epidemic Meningitis with Albucid (Acetyl Sulfanilamide). R. Fröhlich.—p. 1555.
Interruption of Pregnancy and Sterilization on Basis of Cardiac Indications. F. Lange.—p. 1557.

Azosulfamide in Cholangitis.—Mancke and his associates show that bacteriocholia must be strictly differentiated from biliary infection. Studies in nearly 1,000 cases revealed that bacteria are present in many cases in which infection is absent. After reviewing the bacteriologic aspects of cholangitis and the customary therapeutic methods, they point out that in recent years chemotherapy has assumed great importance from the

standpoint of choleresis and of disinfection. As regards choleresis, the parenteral administration of the pure bile acids signified a considerable advance. However, as regards the possibilities of disinfection of the biliary tract the chemotherapeutic measures still lack a good foundation. Combinations of bile acids with disinfecting agents have been recommended for disinfection, but little is known regarding their elimination and their bactericidal effect. Since derivatives of sulfanilamide have been used in infections with cocci and with organisms of the coli group, and since such infections are often found in the biliary tract, the authors decided to make experimental and clinical studies on the use of azosulfamide. Experiments on dogs with biliary fistulas concerned its elimination. The clinical observations were made on extensive material of a clinic in Leipzig, where azosulfamide has been used in treatment of biliary disorder the last eighteen months. It was administered orally in a dosage of three times 0.6 Gm., usually in combination with hydrochloric acid-pepsin or intramuscularly (from 5 to 10 cc. of a 2.5 per cent solution); or, to intensify the action, these two forms of application were combined for the duration of six days. In combination with the customary dietetic and physical therapy, medication with azosulfamide produced good therapeutic results. In some cases cure was rapid with a critical defervescence. The authors gained the impression that azosulfamide is particularly valuable in cases of inflammatory diseases of the biliary tract which are accompanied by acute symptoms, such as high fever, colic-like pains and more or less pronounced jaundice. The inflammatory symptoms react especially well to azosulfamide. Moreover, the general condition improves rapidly in cases in which the cholangitis has a septic character and is accompanied by chills and malaise. On the other hand, in chronic infections of the biliary tract, azosulfamide produced no improvement.

Problemy Tuberkuleza, Moscow

Pp. 1-127 (No. 8) 1939. Partial Index

Basic Principles in Surgery of Pulmonary Tuberculosis. N. G. Stoyko. —p. 3.
*Complications and Exacerbations Following Thoracoplasty. A. S. Kapushchevskyy and A. G. Kiselev.—p. 10.
Alcoholization of Phrenic Nerve as Method of Treatment of Pulmonary Tuberculosis. G. N. Simenshteyn.—p. 16.
Combination of Phrenico-Exeresis and Cervical Sympathetic Block in Treatment of Pulmonary Tuberculosis. M. M. Alperin and I. E. Kornman.—p. 19.
Treatment of Tuberculous Empyema with Diluted Solution of Sodium Hypochlorite. A. V. Pakhomov, I. A. Shakleyn and E. L. Papysheva. —p. 23.

Complications Following Thoracoplasty.—According to Kapushchevskyy and Kiselev, the most frequent complications after a thoracoplasty are those involving the pulmonary tissue. They present themselves, as a rule, either as asymptomatic atelectases or atelectatic pneumonias. The authors consider the latter an allergic inflammatory phenomenon caused by the tuberculous virus. Atelectasis, when accompanied by considerable exudate, may resemble a massive pneumopleuritis. The satisfactory condition of the patient, absence of displacement of the heart to the opposite side and rapid absorption of the exudate speak for atelectasis. Postoperative pneumonias resulting from infection of the pulmonary tissues with virulent organisms and not associated with atelectasis is a grave complication. Complications involving the opposite side are rare. Cardiovascular decompensation has not been frequently observed.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5715-5842 (Dec. 9) 1939. Partial Index

Hemolytic Icterus in Children. E. Gorter.—p. 5719.
Prophylaxis of Infantile Eczema. J. J. Neuteboom.—p. 5723.
Gold in Treatment of Bronchial Asthma. F. Bouman.—p. 5728.
*Chemotherapy of Gonorrhea in the Male. M. K. Polano.—p. 5732.
Hepatic Calculi. B. A. Benavente.—p. 5738.

Chemotherapy of Gonorrhea in the Male.—Polano designates as chemotherapy of gonorrhea the oral or parenteral administration of the derivatives of sulfanilamide. There is no agreement as to which of the different preparations is the most effective in gonorrhea. Of the basis of his experiences and data found in the literature, he concludes that sulfapyridine produces at present the best results. Among fifty male patients who had been infected from three days to several months previous to the onset of the chemotherapy, forty-six were cured by the oral administration of sulfapyridine alone. During the first three days the patients were given daily six tablets of 0.5 Gm. each, then for three days four tablets daily, and finally for three days two tablets daily. In the majority of cases the criterion of cure was that ten provocations be successfully sustained, which consisted of four instillations of 1 per cent solution of silver nitrate, of two prostatic massages and of four bougienages.

Nordisk Medicin, Helsingfors

4: 3501-3562 (Dec. 2) 1939. Partial Index

Hygiea

Case of Pericarditis Due to Penetrating Foreign Body (Fish Bone). S. Wiholm.—p. 3521.
Effect of Cold on Metabolism with Special Regard to Tuberculosis and Diabetes. E. Forsgren.—p. 3523.
Investigations on Crenation of Red Blood Corpuscles. G. Trönnberg.—p. 3525.
Case of Congenital Tuberculosis. A. Beskow.—p. 3527.
Contribution to Question of Biologic Effect of Vitamin D. Å. Wilton. —p. 3529.
*Pathogenesis in Venous Thrombosis and Mechanical Prophylaxis. R. Frykholm.—p. 3534.

Pathogenesis of Venous Thrombosis.—Frykholm states that his study of necropsy material comprising twenty-four cases with pulmonary embolism show four sources of beginning thrombosis: the musculature of the calf of the leg, the adductor musculature, the plantar region and the pelvic veins. An ascending thrombus seems to pass from these regions in the direction of the blood stream, while retrograde thrombosing is rare. Early clinical diagnosis of thrombosis requires a thorough examination of these four regions. Veins with varicose distention for a greater extent and thin walls partly collapse during confinement in bed, whereupon intima lies against intima. This occurs particularly in the musculature of the calf of the leg and the adductor muscles, which take the least part in the active movements performed in bed and through which minimal amounts of blood pass. In addition there is mechanical pressure. The veins of the soles of the feet and the pelvis can also be assumed partly to collapse under certain conditions. Normal metabolism of the intima depends on contact with the circulating blood. When two intima layers are pressed against each other, a disturbance in the nutrition of the endothelium can easily occur. This injury of the blood vessel endothelium is considered an important primary condition in the origin of thrombosis. Substances given off by the damaged endothelium and by the thrombus promote coagulation, and the thrombus grows in the direction of the blood stream. In stagnant blood a red thrombus develops, in quickly flowing blood a white thrombus. In mechanical prophylaxis against thrombosis of the lower limbs the author believes that the veins of the lower extremities must, at least periodically, be sufficiently distended with blood and the circulation in the threatened region be sufficiently rapid. Consequently he advocates raising the head of the bed so high that the patient has the feeling of slipping down and is forced to active exercise of the muscles of the calf of the leg and the adductor group.

4: 3563-3636 (Dec. 9) 1939

Hospitalstidende

*Calcinosis Circumscripta: Report of Case with Clinical and Etiologic Considerations. E. Westerlund.—p. 3563.
*Insulin Compared with Histamine as Stimulant for Gastric Secretion. P. Horstmann.—p. 3566.

Calcinosis Circumscripta.—Westerlund reports a case of calcinosis circumscripta in a woman aged 54 with simultaneous Raynaud's disease. The frequent occurrence of the condition in cases of scleroderma and Raynaud's disease is emphasized. The increased calcium content in scleroderma in connection with chronic traumas, when this combination occurs, is assumed to be the cause of the manifestation of calcinosis circumscripta. The question remains, the author says, whether similar conditions prevail in the uncomplicated cases and those complicated with Raynaud's disease.

Insulin Compared with Histamine as Stimulant for Gastric Secretion.—Horstmann tested these two agents in six cases of neurologic or psychiatric disorders, one with normochylia, five with achylia. Fractionate alcohol test meals were given. In all cases insulin was more effective than histamine, and insulin caused secretion of gastric juice where the histamine had no effect. The value of insulin in anxious, depressed patients without appetite is stressed.

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The Patient and the Art of Living

AN APPROACH TO PSYCHOSOMATIC MEDICINE

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The purpose of these lectures is to explore the realm of the so-called affective disorders, especially those states of mental conflict and maladjustment with predominantly physical complaints. I hope we may stimulate in you who are about to go out as practitioners in medicine an interest in this generally neglected and ofttimes unrecognized field.

A London physician [1] discussing the curriculums of medical students said "What they really need to know is the Art of Living. And how is that to be taught?" I have often felt that these patients would never have needed help, would never have been ill, if they had had an ample and wholesome background, a philosophy of life, an established code of conduct to buffer the strains of ordinary life.

In any type of practice one is constantly seeing this class of patient, but for the internist it constitutes a large percentage of his practice. This may be due partly to the fact that having made the rounds of the general practitioners and of specialists who have not looked beyond their limited fields such patients finally come in for a complete diagnostic work-up. In a practice limited to internal medicine, psychoneurosis as a primary or secondary diagnosis may be found to outnumber all others in frequency except the cardiovascular diseases and the endocrine disorders. It occurs as frequently as gastrointestinal disturbances. It is considerably more common than the pneumonias or blood dyscrasias.

This is a situation that often stuns and baffles the young practitioner making his first contact with private practice. At school and even in the teaching hospital he has mechanized his study of the patient. Physiologically, anatomically and even pathologically he has been dealing with a fairly definite science. In the study of patients, routine questions are asked regarding subjective symptoms, physical signs are elicited and laboratory investigations galore are made; then the results are tabulated and correlated much as an engineer would work with his slide rule, and a definite diagnosis is established. Treatment is almost as routine, and one has a glow of satisfaction over one's workmanlike technic. When the physical and laboratory observations fail to fit the subjective symptoms the patient is dismissed with a blithe "Well, we can find nothing wrong with you" and the diagnosis is filed as "No disease found." But there *is* something wrong, there is something wrong or these people would not be appealing for help, and the private practitioner cannot so blithely dismiss the sufferer who has come to him for help.

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1. Banister, Harry: Psychology and Health, New York, Macmillan Company, 1935, p. vii.

THE PROPER APPROACH

Psychosomatic disease may be defined as a condition in which the chief complaint is usually physical, the subjective symptoms are usually out of all proportion to the physical findings, and there is always an underlying and often obscure mental or psychic disorder based on a constitutional inadequacy and on some environmental or circumstantial conflict.

In organic disease the symptoms are clearcut and are apt to be minimized by the patient. In the affective disorders the complaints seem to spread out like the waves on a pool of water into which a stone has been thrown, where though the primary disturbance is really slight the turmoil of the waters is great. Nevertheless these somatic manifestations are due to some real functional or mild organic disorder. They are not imaginary. True, the patient's threshold to pain and discomfort is lowered or he compensates poorly for his disability. But where there is a physical complaint there is an underlying physical defect that needs attention. Incidentally the patient who is having neurogenic but nevertheless very real abdominal distress may rightly be much dissatisfied with the medical opinion that because the gastrointestinal

series and other investigations are negative there is nothing wrong with him. In fact the somatic complaints offer an opportunity to the physician to give the patient relief and thereby win his confidence and trust much more effectively than psychotherapy alone could ever do.

It is unfortunate that in the mind of the layman there is a stigma attached to mental disorders, but he does resent being told that his trouble is all "nerves" and resents being sent to a physician who treats only "nerves." The neurasthenic patient seldom consults his doctor for nervousness but rather for indigestion or palpitation of the heart or for some other physical ailment, and he is more interested in the relief of these symptoms than in diagnosis. A patient who had had severe headaches all her life once told me that because there was nothing organically wrong with her she had been referred to a psychiatrist, that she had been psychoanalyzed and had been told that she was a Peter Pan type of individual, that she would have been all right if she could have remained a child and that it was a mistake for her to have assumed the strain and obligations of married life and motherhood. "Well," she said, "That may be true, but what am I going to do about it now? I still have headaches."

I do not wish to minimize the help that may be rendered by psychiatric consultation and advice but what is needed in the attending physician is not a highly specialized knowledge of psychiatry or of any other of the specialties but rather a breadth of medical vision and skill that will enable him to make the patient comfortable. In addition he must have a large fund of patience and compassion and common sense so that he can establish contact with the patient and win his confidence. The proper approach to these cases might, therefore, be said to be one-third psychiatric, one-third physical and one-third compassionate guidance in the Art of Living.

WHY THEY SEEK RELIEF

With somatic complaints looming large in the patient's consciousness and with the treatment of these physical ailments so important, what then are the disorders for which the psychoneurotic person seeks relief? By far the largest number (37 per cent of a series of 250 cases studied) complain primarily of gastrointestinal disturbances. Although positive and often severe, the symptoms usually fail to fit any established pattern. Quite typical are postprandial bloating and distention, intestinal gas with eructation and flatus, migratory and ill defined pains, constipation often alternating with diarrhea, and most characteristic of all a real or alleged idiosyncrasy for many common foods. Gastrointestinal roentgenograms in these cases are negative except for evidence sometimes of disorders of motility and peristalsis, and gastric analysis reveals no disturbances of gastric acidity or rate of secretion. This is important to remember in treatment where belladonna and its derivatives are usually indicated but where alkalis so commonly given for nervous indigestion are not. In fact, the giving of alkalis may aggravate an already existing alkalosis of nervous origin.

Second in order of frequency are cardiovascular symptoms (a primary complaint in 17 per cent of the series). In these cases there is palpitation, irregularity due to premature contractions, and precordial pain usually described as either a constant mild ache or as a sharp sticking or pricking sensation not related to exertion. This pain is utterly unlike the pain of coronary disease with its squeezing substernal oppression or its severe knifelike stabbing pain through the precordium or radiating to the arm. Patients with neurogenic heart disease always claim to be short of breath on exertion, but this is obviously not a true dyspnea. Not infrequently this type of patient has been told by some casual physician that he or she had a "weak heart" and has taken digitalis. This is tragic, because the patient becomes heart conscious and a cardiac neurasthenic. It is so much easier to convince patients that there is something wrong than that there is nothing wrong. Examination of these individuals often shows poor reaction of pulse and blood pressure to change of position and exercise but essentially negative electrocardiographic manifestations. The trouble is obviously due to sympathetic nervous system imbalance and calls for sedation, regular graduated exercise, and reassurance in large doses.

The psychoneurotic patient seldom limits his symptoms to one bodily system. In fact it is quite characteristic that in giving his history the psychoneurotic individual seems to be a jangling mess of dysfunctioning organs. Questions directed at the nose and throat, the eyes and ears, the cardiovascular system, the lungs, the gastrointestinal system, the genito-urinary system and so on throughout all monotonously reveal some complaint.

The general complaint of malaise and fatigability is most common (a primary complaint in 14 per cent of the cases). It is characteristic that this is malaise rather than fatigability. The patient is tired when he wakes up, tired and ambitionless during the day, and tired when he goes to bed at night. Yet when called on for something that has to be done he somehow forgets himself and musters the strength to do it. This symptom is a source of worry to the examining physician and of expense to the patient because of its suggestiveness in differential diagnosis. One must consider and rule out anemia, hypothyroidism, hidden cancer, masked renal disease with toxic symptoms, tox-

emia from hidden foci of infection, myasthenia gravis, hypoglycemia, early Addison's disease, tuberculosis and, of course, syphilis in one of its bizarre manifestations. Malaise is a trouble making symptom because it is essentially mental and not physical in origin. It is a protective mechanism against the demands of the World. But it can be labeled neurogenic in origin only by a system of elimination. In its specific treatment mild sedation often accomplishes more than stimulation, although a morning dose of amphetamine sulfate often seems indicated.

"Aches and pains" was the primary complaint in 10 per cent of the cases as well as a secondary complaint in most of the others. This may take the form of a general myositis or of definite backache, headache or neuritis. The symptoms are often so vague that one wonders if they are real, but so persistent that one is forced to conclude that they are due to toxemia, possibly gastrointestinal in origin or due to neurovascular disturbances. Massage and physical therapy often bring welcome relief in these cases. This is the type of symptom which is apt to make the patient the slave of the medicine bottle or of many bottles, especially if the hurried and distraught physician reaches for his prescription pad at the recital of each new ache. Better perhaps to mix a little tolerance for discomfort with some of the medication.

MENOPAUSAL SYMPTOMS

The next group (7 per cent of the series) is of considerable interest and more gratifying to work with because specific treatment yields such encouraging results. This is the group with menopausal symptoms. The symptom complex is one that is almost classic in its uniformity. There is malaise and yet restlessness. There is an occipitocervical neuralgic "headache." There are vasomotor disturbances manifesting themselves as "hot flashes" and excessive perspiration —a perspiration started by excitement rather than by exertion. There is often palpitation of the heart and sometimes irregularities due to extrasystoles. Intestinal indigestion is not an uncommon complaint. Changes in the character and regularity of the menses is usual. And finally there is arthritis of the menopause, probably secondary to vasomotor dysfunction. This arthritis typically affects first the knees and the proximal phalangeal joints. The patient complains of some pain and stiffness in going up stairs and of stiffness and swelling of the fingers. The swelling, when it occurs, is due to periarticular tissue edema. X-ray examination, which is at first entirely negative, will later typically show degeneration of the synovial membrane and of the end of the bones, and hypertrophic lipping of the joint margins. These symptoms are presumably due to endocrine dysfunction and the treatment is specific—the administration of estrogenic substance, preferably parenterally, and of thyroid if it is indicated or tolerated. Treatment of the condition is otherwise symptomatic such as mild sedation, atropine for the hyperhidrosis, and dietary restriction for the indigestion. The psychoneurotic state so often accompanying the menopause is not to my mind an endocrine born disorder. It is undoubtedly caused or aggravated by the somatic complaints; but of its real basis I shall treat later.

It is not uncommon for otolaryngologists to see the psychoneurotic first (5 per cent of this series referred the trouble primarily to the nose and throat). The complaint is usually of a soreness or aching in the throat or of nasal symptoms in spite of a grossly negative physical examination. In the differential diagnosis a masked infection with Vincent's spirochete must be kept in mind, and there are cases of peridental Vincent's invasion without the usual ulceromembranous lesion, when a sore and aching throat normal in appearance is the only sign.[2] However there are many cases for which there seems to be no physical basis and which must be labeled as purely neurogenic in origin.

There is very definitely an arthritis that is typical of the psychoneurotic state. It is hypertrophic in type and although chronic in its course is subject to more variation than the usual hypertrophic arthritis of old age. The treatment other than that aimed at the psychic background is as it would be for the other arthritides. Arthritis was the primary complaint in 4 per cent of our series.

Strangely enough, genito-urinary complaints seem rare as the outstanding symptom (3 per cent). Even neuroses based on sexual maladjustment manifest themselves first elsewhere in the body. Cutaneous lesions, especially pruritus, occur occasionally, as does low grade fever. The neurogenic fever is a constant source of worry to the attending physician because of the fact that, although every possible cause of fever has been investigated and discarded, one always fears that something has been overlooked. However, in spite of this apprehension and of a desire to follow the daily temperature curve as a stock broker might follow the ticker tape, it is usually advisable to have the patient throw away his thermometer and forget his fever.

TAKING THE HISTORY

In the taking of the history, the recital of the physical ailments usually rushes on in an unending stream, the patient often somewhat petulantly brushing aside any attempt on the part of the examiner to direct his recital into any well ordered plan or description of any recognized symptom complex. Yet of the psychic factors

2. Barrow, W. H.: Systemic Reaction to Oral Fusospirochetosis Without Local Lesions, Ann. Int. Med. 12: 508 (Oct.) 1938.

he usually says nothing until subtly pressed for information. How, therefore, is this so important information to be elicited and when? It is essential that the past and present life of the patient be reconstructed. Leading questions are asked and hints of conflict or maladjustment are followed up as tangents from the main line of questioning as they arise. "Where did you live as a child? What did your father do? Were you comfortably provided for? Was your home life happy? Did you enjoy school?" Answers to these personal and pertinent questions elicited in a sympathetic and tactful way will often reveal a faulty background which partially explains the present mental state. "What did you do after you left school? Did you enjoy your work?" The wistful eagerness with which this last question is often answered in the affirmative is illuminating and pathetic. "Where did you meet your present husband? What is he like and what does he do? What does your immediate family consist of, that is, who constitute your household?" In-laws who may be the unconsciously irritating factors often reveal themselves here. "Do you do your own housework? What time do you get up in the morning? What do you do after breakfast—and after lunch? Do you find time for outside interests? Do you take any exercise? Have you any real hobbies?"

BALANCING THE BOOKS

After delving into the lives of patients, one is impressed with how poorly most individuals plan their lives for pleasure, for the use of their leisure hours. Yet when we balance our books at the end of life the two questions that it would seem must sum things up are "What have you accomplished and more important still how much fun have you had—how much enjoyment?" Often then in getting an answer to the questions "What do you do with your leisure time and what are your hobbies" one runs on a gold mine of information—thwarted desires, inhibitions, aimless and restless efforts at escape, or stolid resignation and lack of interest—the depth of the patient's background. In fact, I often think that from the answer to this question I can then and there make a prognosis. I am given a hint as to quality and quantity of the material with which I have to work. And so the patient's portrait begins to unfold. "What do you do with yourself evenings? Do you have many friends? Do you enjoy seeing them? Do you get out to parties and dances and other forms of entertainment as much as you would like to?" Here sometimes for the first time one uncovers evidence of marital incompatibility or of maladjustment to marriage. The husband comes home tired and wants to read the paper and go to bed. The wife, anxious for escape from her oppressive "four walls," would like to do otherwise—or perhaps both husband and wife, chafing at the bit, are tied down by children who cannot be left alone.

Detailed questioning with regard to sexual relationships are, of course, of great importance and fortunately, as the result of public education in these matters, such questions are not only not resented but are welcomed as an opportunity to discuss problems the patient has long wanted to discuss or at least to satisfy some natural curiosity. And again as tangents from this angle one often obtains an illuminating glimpse of some unsuspected character complex. I do not, however, believe that from the point of view of practical psychology most or even many mental problems can be laid at the door of sexual repression.

In spite of or perhaps because of the intimate nature of these questions, it seems advisable to get this information at the time of the first visit. The patient is then usually in a mood to tell his whole story, his feelings toward the physician are purely impersonal, and there is therefore apt to be less reticence than there would be later on; and perhaps most important of all at this time the patient has not yet centered his attention on the treatment and progress of his physical ailments.

This type of questioning is not a very searching psychiatric examination. In fact it is not in one sense psychiatric at all. It merely constitutes an effort on the part of the examiner to reconstruct the patient's background and environment, to get a true picture of him as a human being and not as merely a physiologic and pathologic machine. Francis Peabody [3] in his monograph on "The Care of the Patient" said that "what is spoken of as a clinical picture is not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relatives, his friends, his joys, sorrows, hopes and fears. . . . Everybody, sick or well, is affected in one way or another, consciously or subconsciously, by the material and spiritual forces that bear on his life, and especially to the sick such forces may act as powerful stimulants and depressants. . . . In all of your patients whose symptoms are of functional origin the whole problem of diagnosis and treatment depends on your insight into the patient's character and personal life, and in every case of organic disease there are complex interactions between the pathological processes and the intellectual processes which you must appreciate and consider if you would be a wise clinician."

THE UNDERLYING FACTOR

We have then reviewed the long list of somatic complaints, those outward physical signs of an inward spiritual restlessness, which bring the patient to the doctor's office, and we have by

3. Peabody, Francis W.: Doctor and Patient, New York, Macmillan Company, 1930, pp. 27-57.

patient questioning and sympathetic listening constructed the patient's background and environment and his reactive processes. What now in this typical psychoneurotic group are the underlying psychopathic factors? About 75 per cent of the patients are women and the problems are therefore predominantly feminine problems. Men are more apt to recognize the underlying maladjustment or mental conflict as a cause of the trouble and either meet the issue or rationalize their feelings. Recognizing the cause as psychic, the man is also less apt to seek medical advice than is his wife for her supposedly physical complaints. Furthermore, with his work and his greater freedom he is able to compensate better for the lack of mental harmony.

Among the men the anxiety states and depressive neuroses account for about 40 per cent of the cases, while only 12 per cent of the women will be found to fall in this group. Without a psychoanalytic survey one is seldom able to find a cause for these usually severe and well established neuroses. The difficulty is that we are dealing with a personality, with a mental state, that has become pretty well fixed. The anxiety state may often be traced to childhood environment or experiences, even to anxieties never consciously experienced; but the emotional state has been "displaced" from the original object and transferred to other objects, or anxiety has in fact become a habit of thought. Thus, for example, the child whose tranquillity and security have been threatened by marital discord of the parents grows up into a person surrounded with thick banks of gloom who, although he recognizes that he is no longer dependent on his parents for happiness and security, still approaches each new episode of life with fear. To treat these individuals properly, one must completely rebuild the personality, a task calling for a skilful psychiatrist.

INADEQUATE EQUIPMENT

About the same percentage of the male cases and about half of the females will fall in that large group characterized as being constitutionally inadequate. A few of these by careful psychiatric study could probably be more accurately classified, but most of them seem simply to belong to that group with inadequate equipment to meet and handle the problems of everyday life. The trouble may often be traced back to hereditary instability, to poor childhood environment or to early psychic trauma, but in any event the adult psyche is a weak vessel. One might well say that these patients are like boats which are safe and comfortable as long as they stay in the sheltered waters of a harbor but which will founder if subjected to the buffeting of even an ordinary sea outside. It is this type of man who was "shell shocked" in the World War (as the term was then loosely used). In this group we find the woman for whom the ordinary obligations of married life are too great a burden and who often escapes to her physical ailments as a subconscious excuse for her failure to "make good." It is this type of patient in whom the will to get well is often feeble because health means again going out into a world that is already too great a challenge, whereas illness is a not uncomfortable refuge.

Many of these states may also be traced to childhood. It is Adler's belief that all psychoneuroses are based on some phase of an individual's expression of his ego, in a striving for power. Thwarting of this instinct then in the formative years may be the basis for the present trouble. Frustration breeds lack of confidence and a noncooperative mental state. On the other hand, too great coddling is detrimental and many adult neuroses can be traced to lack of mental discipline. It is to be hoped that our advocates of progressive education will not let their enthusiasm carry the movement so far as to remove all the drudgery from school work. There is great virtue in doing well an unpleasant and uninteresting task, the only rewards for which are the escape from a penalty and a satisfaction with a job well done—again an expression of power.

THOSE WHO NEVER GROW UP

In this group of constitutionally inadequate individuals are those who never grow up. These people with their ingenuousness and childlike ways are often most attractive but they are awfully hard to live with. After all, there is not a Santa Claus and the dolls of the nursery do not present the problems real children do. One must in adult life face and adjust oneself to reality. This these individuals usually fail to do. In this group one finds most alcoholic and drug addicts, those who seek the comforting anesthesia of alcohol or drugs to escape from a reality they would not face. In fact in this group we find, I think, most of the disagreeable and pathetic individuals of society—introverts retreating from an alien world, nagging women and fault finding men, showing in their attitudes evidence of a transference of disappointment and hatred because of thwarted desires and ambitions, reformers who finding themselves too small or too helpless in an unfriendly world try to make it over to fit themselves. Many mental states can therefore be explained on the very simple basis of this constitutional inadequacy.

In the performance of the physical tasks called for in our daily routine we expect to have the necessary strength and reserve to accomplish them. The normal youth expects and enjoys the physical training and exertion to make this possible and is ashamed to be called a physical weakling. Our daily routine calls also for mental stamina and reserve. If

these have not been developed we cannot meet the demands made on us and we not only fail but create within ourselves a mental complex as we struggle with our inadequacy.

A large number of women and a smaller number of the men (24 per cent and 8 per cent respectively in the series studied) have neuroses based on maladjustment to marital and home life. It is with considerable temerity that I approach the subject of marriage, but as one reviews intimately the details of this relationship in the lives of patients and of friends one cannot but reach the conclusion that American marriage often results in some bizarre situations. The sexual instinct, the desire for a mate, is simple, fundamental and primitive. But marriage instead of being the solution of a social and individual problem actually creates problems where none existed before—and this is true even where such obvious harassments as family dissension, financial worries, differences of social and educational background, and clashes of personality are nonexistent. It is pertinent to point out the factors that are so often causes of mental conflict and maladjustment.

THE PLEDGE AT MARRIAGE

In the first place the pledge at the time of marriage with its "till death do us part" is too irrevocable in spirit. In spite of the ease of divorce, an individual with a highly developed conscience or with a high sense of consideration for others (the type of individual that gets into mental quagmires), this type of person has a strong feeling of marital obligation and will not desert even an unworthy mate. On the other hand the unworthy mate often makes up her mind that she is not going to be deserted and creates a situation that is most difficult of solution. From the medical point of view, divorce as an escape from an aggravating situation should be not only legally easy and fair but also without social stigma.

In addition to the finality of marriage, which mentally depresses many individuals, there is often demanded a complete submergence of personality which obliterates them as individuals. The I becomes We. Old friends are lost, old associations, even old habits, are given up in the interest of marriage. In other words, the individual is made over to fit the relationship instead of the individual finding a relationship that fits him—a situation calling for adjustments which are often the cause of mental conflict. In women the failure to find in marriage the emotional outlet that was expected, the realization that marriage is a business and social partnership rather than an adventure in romance, often results in a repression neurosis. In men, on the other hand, the domination and surveillance by their wives, more complete than anything experienced under parental supervision, breeds a conflict with instinctive desires that sometimes results in periodic debauchery, in alcoholism or in some other form of psychic escape. The actions of American men at a convention away from home and without their wives are pathetic evidence of the restraints and inhibitions under which they regularly live.

A PARADOXICAL SITUATION

Not only may marital conflict cause somatic disorders but the converse is also true. The possibility of chronic ill health in one's partner may in accordance with the marriage vows be accepted as part of the contract, but it may also result in frustration and resentment. Another source of maladjustment is seen in women who prior to marriage have held responsible and interesting positions and who after marriage find themselves alone and idle most of the day or at best engaged in petty household routine.

In short, from the psychiatric point of view the problems of marriage are problems of the emotions or of the conflict of the emotions with experience. Furthermore, it seems that those who emotionally need marriage the most, those whose intensity of feeling calls for such outlet, are the individuals most likely to present these problems. The cause of this paradoxical situation lies, I believe, in a misconception of the place of marriage in the psychic pattern.

Sentiments may be said to be "organizations of the instinctive tendencies and consequently of the emotions around various objects." There is a need in life for a dominant central sentiment, "a star to hitch one's wagon to." This central sentiment should be invulnerably entrenched within oneself. The integrity of marriage is anything but invulnerable, its fate is shared between two individuals. Marriage should be a means to an end instead of an end in itself. It cannot be the basis for a satisfactory dominant central sentiment. If all of this were recognized, if marriage and the sentiments built around marriage were only subordinated to more stable instruments, if in other words marriage demanded less of its victims and less were demanded of it, it would fit better into our psychic pattern.

Although in a larger sense all marriage problems are sexual problems, physical sexual incompatibility as a cause of affective disorders is relatively unimportant. In women loss of libido or actual frigidity is often a symptom of a psychologic conflict. Sexual habits and reactions should be studied in each case and the cause of abnormalities determined if possible. It should be remembered that impotence in the male and frigidity in the female are practically always psychic rather than physical in origin. For this reason they are most difficult to handle and after a psychoanalytic house cleaning glandular therapy, for its suggestive as well as for its actual endocrine replacement value, is indicated.

One hears much of the problem of sex inhibitions in the unmarried. I feel that it is an overemphasized problem. In the first place there is in these days more sexual freedom in the single state than there is for those under the restraint of marriage. In the second place it is perfectly possible for a person to get along without sexual intercourse if he has some other interests in life and if overzealous friends will refrain from meddling in his love life. Much unhappiness and sexual unrest are caused by our American overemphasis on sex. We are the most sex-conscious people in the world, and what should be instinctive and emotionally spontaneous becomes an artificially produced obsession. In spite of this, sex problems and in fact problems of any sort are less common among the unmarried than among the married.

BUSINESS WORRIES

Of greater significance among psychoneurotic men than marriage and sex is business. (Worry or dissatisfaction in business will account for about 25 per cent of the cases.) The changing social order has created troublous economic situations which are causing more unhappiness than did the old order which they are trying to change. It should be remembered that in these cases it is not long hours and hard work that cause the mental perturbation but rather the factors of fear and uncertainty and indecision which nag at the individual and interfere with his normal mental rhythm. As in marriage, there is sometimes the factor of frustration and disillusionment as a man finds his way to achievement blocked or the validity of his ideals questioned. There are, of course, only two solutions to the problem, and from the psychiatric point of view it is immaterial which road is taken. The patient must adjust himself to his environment, accept the inevitable or get into another line of work.

It is of interest that grief, such as over the loss of husband or child or over some family calamity, accounts for the disturbed mental state in some of the women (8 per cent) but in men is rare as a neurogenic factor. The grief complex is, of course, simply a lack of adjustment to a loss, sometimes due to a pitiful lack of other sentiments and interests, and sometimes to a morose enjoyment of the emotion of sorrow or of the sympathy that comes in its train.

Two other etiologic factors apt to be seen exclusively in women are conflicts due to family complications (other than marital) and nervous exhaustion due to mental and physical trauma. Because there is so little that can be done for these groups in a remedial way, it is fortunate that the two classes are small. Filial obligations are often a depressing problem, but as long as one has a conscience there is no escape; as for trauma, it leaves scars that cannot be obliterated.

The menopause is blamed for many of the depressive neuroses and in this woman has no monopoly. A male menopause, with mental and physical symptoms, is now described. As stated before, I do not believe this is endocrine in origin except that the somatic symptoms due to the endocrine dysfunction are aggravating factors in precipitating a mental breakdown. Sometimes there is a constitutional instability and inadequacy which will not stand the strain of any increased physical burden. Also it seems that often with the approach of the menopause the woman realizes keenly the end of her reproductive period and the approach of old age, in which because of menopausal symptoms the infirmities of age are emphasized. In balancing the books she realizes that the romance of childhood, young womanhood and motherhood is over. Often she has nothing left but the companionship of an aging and often unfaithful spouse and she feels the world closing in around her. In the neuroses and hysterias of this period of life in both men and women, one is reminded of the final struggle of the fish before being gathered into the net. It is my impression that this psychoneurosis of the menopause is much more common in married than in single women, though both, of course, have the physical symptoms. Fortunately this is usually a passing phase. In the normal individual, mental adjustments are made and middle and old age may prove to be the most serene and happy periods of life.

CASE HISTORIES

A few case histories will illustrate the neurogenic backgrounds I have been discussing and will help visualize and emphasize the problems:

As an example of the anxiety neuroses there is the case of a young Jew, manager of a small store. He consulted a physician because of chronic indigestion from which he had suffered for years. The manifestation of this had been heartburn, eructation of gas, bloating and constipation. Several weeks before coming in he had fainted several times in one evening and on three occasions since that time. At other times he had chills which had lasted from fifteen to thirty minutes. There had also recently been considerable dizziness. It developed that he had been under medical observation on numerous occasions and that all investigations, including gastrointestinal roentgenograms, had been negative except for evidence of a hypermotility of the intestinal tract. Cutaneous tests had revealed sensitivity to several foods, but elimination of these foods from his diet had failed to give any relief. A gastric analysis, electrocardiogram and basal metabolic rating had all been negative. This young man was found to work long and hard at his business, he took no exercise and he had no hobbies. He roomed with two business associates and said that their conversation in their off hours was largely about their business. A repetition of the gastrointestinal studies and of the other laboratory procedures failed to reveal evidence of any organic disease. He was given symptomatic treatment and obtained enough relief to warrant his returning every few days for adjustment of his routine. What this individual needed, of course, was a complete change of personality with a resulting interest in activities, both physical and

mental, outside of his job, and better balance in his application to his work.

Another case of the same type was that of a 35 year old seaman who complained of nervousness, arthritic pains, a postnasal discharge, indigestion, and worry over the firmness of an old hernial scar. A number of years before he had had a gonorrhea, which had apparently been thoroughly and effectively treated, and at another time he had been told that he had tuberculosis. In spite of repeatedly negative physical examinations he worried a great deal about both of these possible conditions. His mental state was further disturbed by a recent marriage and subsequent separation. He was advised to try to forget his physical symptoms, to settle his marital mixup, to seek a change of work and environment and finally, in the event of the need for medical attention, to seek the services of a psychiatrist rather than of a urologist.

The 38 year old wife of a government official, with her many symptoms and negative physical examinations, is a good example of the tremendous amount of ground that can be covered in a thorough study of one of these cases. When first seen her complaints were malaise and fatigability, anorexia, nausea and vague abdominal distress. She related that this was a recurrence of a symptom complex which had occurred several times previously and that complete examinations at each time had failed to reveal any organic disease. While she was under observation there were a number of interesting clinical episodes. She intermittently had an afternoon elevation of temperature, there was at times a severe neuralgic pain in the upper part of the back, at other times there was an unexplained discomfort between the costal margin and the crest of the ilium on the right side, at another time she developed a temporomandibular synovitis, later she developed a severe urticarial rash accompanied by an axillary and inguinal adenitis which was unexplained and which subsided spontaneously, and intermittently she had a "black tongue." Hers was one of the case which always keeps the attending physician worrying over the possibility of missing some hidden condition, particularly in view of the fact that there was never any demonstrable psychopathic factor which could explain her condition on a neurogenic basis. She was happily married, there were no financial worries, and she often made the statement that she had everything to live for and desired nothing as much as she desired getting well so that she could enjoy life. The patient was studied from every possible angle, and almost every known test was carried out on her in order to rule out possibilities in differential diagnosis. She has been treated by various physicians, both as an ambulatory patient and in sanatoriums, and is now in a mental hospital with an established diagnosis of constitutional inadequacy. One of the psychiatrists who had had her under observation for some time explains her mental condition on this basis: Her premarital life was unsatisfactory and somewhat unhappy. She rather pictured married life as an ideal state where she would be relieved of all disagreeable responsibilities and distasteful duties, but as time passed and she failed to realize these expectations her unformulated and unconscious hopes began to fall down about her, leading at first to anxiety and later to depression. He pointed out that behind all this, of course, is a lack of training and preparation for normal living which left her with a rather infantile personality.

In the 32 year old wife of an automobile salesman, we see an example of the vague somatic complaints that may be traced to marital incompatibility. She first consulted me with a complaint of periods of lassitude which she had had intermittently since the birth of her first child two and one-half years before, the condition being worse since the birth of the second child three months before. She suspected that her trouble might be due to hypothyroidism, for which she had been treated in the past, and a basal metabolic test revealed a rate of minus 19. Thyroid medication, however, failed to relieve her symptoms. It was rather typical of this woman that although she was in essentially good health and had before her marriage been active in sports she now took no exercise, had no hobbies and was inactive socially, although she said she still was gregarious in her tendencies. In other words, she seemed to have lost all ambition and interest in life. Advice with regard to the need for exercise and a general change in her habits brought no results and finally in a discussion of sexual relationships where she admitted loss of libido she stated frankly that she had never really been in love with her husband and was now bored with him and with married life. Divorce was discussed quite frankly with both the patient and her husband, and it is interesting that, although no definite step was taken in this direction, dragging the problem out into the open and offering a way out was in itself enough to bring at least partial relief from the somatic complaints.

A young woman who had been married for only one year was referred to us by her mother because of malaise and loss of weight. She had no other complaints and her physical examination was entirely negative. It was only on the third visit and after considerable insistence on the part of the examiner that she admitted unhappiness in her marriage due to financial and social restrictions. On the next visit and after further questioning it developed that her marriage had been precipitated because of a supposed pregnancy and that she really wished to escape from a situation into which she had been forced. As in the preceding case, as soon as a solution of the problem was presented in the form of separation and subsequent divorce the patient was relieved of her malaise and immediately started to regain the lost weight.

That psychoneurosis does not always result in loss of weight is shown by the case of a woman of 48 who consulted me primarily because of overweight. Except for a mild indigestion there were no other complaints until at a later date the patient said that she had for some time felt "bad all over," and the husband revealed a background of considerable marital incompatibility and worry over finances. It is possible that overeating either as a manifestation of nervous instability or as an effort to satisfy an unexplained craving may be a not infrequent manifestation of psychoneurosis.

A housewife of 27, in very moderate circumstances, was seen one night complaining of severe pain in the right lower quadrant with diarrhea and vomiting. She had had several similar attacks during the previous nine months. There was a slight elevation of temperature and there was sufficient tenderness and spasm in the right lower quadrant to justify an appendectomy, in spite of a normal white count. The appendix, however, was obviously not the cause of the trouble and a small ovarian cyst, which might have been causing some discomfort, was removed. This patient had a normal convalescence but on the day that she was discharged to her home she had a nervous chill and again a slight elevation of temperature. Over the succeeding several weeks there were recurrent attacks of nausea accompanied by nervousness, tremor and chilling. On intensive questioning it was revealed that besides her own children she had a stepson who had recently come to live with them. He was epileptic and apparently also had some mental deterioration which had resulted in a fear of him by the patient and dreams at night about the boy's attacks. I felt, of course, that this woman had had an unnecessary operation which might have been avoided if beforehand more could have been known about the family situation.

A not unattractive Jewess of 39 was referred to me for a heart examination because of symptoms of palpi-

tation with exertion and excitement, shortness of breath with exertion, precordial pain, and occasional spells of faintness. Other somatic complaints were a pain in the right flank and back, intestinal indigestion, and a mild productive morning cough. A cardiovascular examination, including an electrocardiogram, was entirely negative. The woman was the wife of the proprietor of a store in which, up to two years before, she had worked as a cashier, at which time she had had a nervous breakdown. Her present attack had been preceded by hard work at the store, worry over the building of a home, and some conflict over some of her husband's family. She volunteered the information that before marriage she had lived in a large Eastern city where she had been in charge of a show room in a woman's clothing store with thirty models under her and where there was always laughter and life and activity. Marriage had meant for her giving this all up, because at first her husband objected to her working and she was left sitting alone all day in an apartment twiddling her thumbs and smoking cigarets. The greatest excitement of the day was going out to dinner with her husband. Here, of course, is an example of a woman who did not have sufficient background to build a life of her own, who was unable to adjust herself to marriage, and who was annoyed and disturbed by the nagging pettiness of the life she was forced to lead. Such mental conflict and maladjustment resulted in sympathetic nervous system instability, which of course explained all of the somatic complaints.

It is quite obvious that, quoting again from Francis Peabody, "What is spoken of as a clinical picture is not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relatives, his friends, his joys, sorrows, hopes and fears."

TREATMENT

Somatic complaints—indigestion, cardiovascular disorders, malaise, neuralgia and the rest—originate in the psychoneuroses usually through disturbance of the so appropriately called sympathetic nervous system. And, conversely, in some instances a minor physical disorder dragging on an unstable nervous system precipitates a psychoneurosis. In either event patient and sympathetic treatment of these physical disorders is most essential. It is apropos to say here that, in the handling of these cases from both the mental and the physical angle, it is necessary that time be given generously to each patient. I am reminded of the anecdote of one of our great clinicians who was seeing a case in consultation in a small town near Baltimore. One of the doctors with him whispered that if he hurried he could catch a certain train back to the city. The consultant replied that they could afford to miss the train but that above all things they could not afford to be in a hurry.

This is certainly the attitude that one must take in attempting to treat these contrary and difficult cases, and in addition to this there is no condition that I know of where scrupulous attention to the details of treatment is more important. There is a temptation to give placebos and to meet each new ailment with a new prescription as the patient expects the physician to do. There is, however, more constructive benefit in giving to the patient in addition to the necessary medication a little insight into the cause of the somatic complaint, and a little encouragement to subordinate the symptoms if they are, as is common, too engrossing an interest or if the threshold to pain is too low or the tolerance poorly developed.

Treatment of the basic neurosis may take one of several forms. Suggestion with its placebos for the soma and hypnotism for the psyche has been abandoned as being of little permanent value. Persuasion alone is effectual because it calls for constant application. Persuasion is a crutch on which the patient leans and without which he is again helpless. It cannot be dispensed from the doctor's office. It is used in sanatorium care but is of value only as a temporary expedient. Incidentally, since the acceptance of persuasive guidance by the patient is based on respect or even affection for the physician dispensing it, since its success is dependent on continuous faith in another person, it is wrong in principle, because what the patient needs is self reliance and self discipline. Compulsion, were it possible, might in many cases be the therapeutic answer. The family and friends of patients, and in fact society at large, would, however, hardly support a regimen of severity and disciplinary routine. Yet circumstances sometimes accomplish this when the neurotic patient receiving sympathetic and expensive sanatorium care loses his money, is faced by an unsympathetic world and is in consequence suddenly cured. One sees less psychoneurosis among men than among women partly because economic compulsion forces the man to keep his emotions under control, whereas his wife, better protected and with some one else to do the worrying, gives way to hers. I heard recently a story of a prosperous and neurotic patient who insisted on an interview with a prominent psychiatrist. The psychiatrist was just ready to leave for a summer vacation but under the insistence of the patient and his family was persuaded to delay his departure. The patient arrived and was asked to tell his story. As he recited his woes the mountains and streams were, I suppose, beckoning his doctor listener and when the story was finished he looked at the patient and said bluntly "Well, what of it?" The patient under the sting of this rebuff straightened out his mental processes and needed no further treatment. This was an unusual situation and an unusual patient; nevertheless the story has its point, and I think we may be justly accused of sometimes encouraging with too much sympathy some of the psychoneurotic states.

The treatment of choice is psychoanalysis, with the patient being made to understand himself, to appreciate the mechanism of the inter-

relation of his mental conflicts and his physical distress, to minimize his symptoms through this realization of their significance, and to recognize his limitations. As mentioned before, the will to get well is indispensable to recovery and the hopeless cases are those in which a life of invalidism is easier and more interesting than a battle for existence with inadequate mental equipment.

THE WEIR MITCHELL REGIMEN

When the psychoneurosis is completely disabling, the old Weir Mitchell treatment is often most effective. It is sound in theory and efficient in its application. The patient is, after careful clinical study, put in an institution, preferably a quiet convalescent or nursing home. He is completely isolated from his old environment and an effort is made to start him off anew, physically and psychically. An efficient and sympathetic nurse is essential. Except for the visits of the doctor and the nurse he is completely shut off from the outside world. He is not even allowed to receive or to write letters. He is put to bed and placed on a semistarvation diet. After a few days, if there is no serious gastrointestinal disorder, the diet is rapidly increased and the patient's first new interest is perhaps in his food and in his increase in weight. Massage and hydrotherapy, which at first are sedative in character but later more vigorous, are part of the regimen, and the visit of the masseur comes as an added diversion and interest. Later, occupational therapy of some simple type is added to afford some physical activity and training in concentration. As the patient improves he is gradually allowed to extend his activities, to venture out for short walks, to come again in contact with the world. The role of the physician through all this is that of the master whose word is law but who, with encouragement, stands ready to help the patient find himself and by his professional skill to relieve the physical discomforts. What is needed in the attending physician is not a highly specialized knowledge of psychiatry or of any of the other specialties but rather a breadth of medical vision and skill that will enable him to make the patient comfortable. The physician should have a large fund of patience and compassion and common sense so that he can establish contact with the patient and win his confidence and, finally, should have the ability to call for and profit through help from consulting specialists when such aid is indicated.

The unfortunate part of the Weir Mitchell regimen is that it is possible only for the well-to-do; but the basic principles may be used generally. For example, even a clinic patient can arrange for rest in the quiet of her room for a period each day; she can resort to the bathtub for modified hydrotherapy; she can get a taste of comparative isolation by visiting the home of some unmarried or childless friend once a week; she can test the value of occupational therapy by developing a hobby, and she can, of course, follow the required dietary regimen. If meanwhile the somatic complaints are adequately treated and the doctor takes the patient into his confidence and makes her understand the rationale of the procedure, the results may be most encouraging.

PSYCHOTHERAPY

Concurrently with the physical routine of such treatment there must be carried on a reeducation in mental processes—and sometimes one has to revamp completely the patient's point of view and his objectives if one is to have any more than temporary relief. The first requirement is complete insight by the patient into the working of his own instincts, emotions and sentiments, and an understanding of his conflicts and maladjustments. The next step is the working out of a practical solution of the problems presented. The patient must be made to understand that it is not so much the harassment of his environment or of the situation in which he finds himself that causes his mental turmoil as it is his own failure to take his bearings, study his charts, lay out a course and get under way. It is indecision and uncertainty as to what is really wanted or as to what one should do that causes the conflict, rather than the disagreeable factors themselves. For example, one must often explain to a patient whose maladjustment is due to marital conflict that from the medical point of view it is immaterial whether he gets a divorce or decides to accept the situation as inevitable, but one or the other he must do.

Some of these people must be taught to acquire a philosophy of life which Osler[4] summed up in the Latin word "aequanimitas." By this he meant schooling oneself not to expect too much of life or of the people among whom one lives, learning that "we aim at the unattainable and must be content with finding broken pieces," accepting courageously disappointment and defeat and joyously fighting on, with only the acquisition of quiet wisdom as one's reward. Carlyle said of Teufelsdrockh that after a period of "ragings and despairings" over a soul tragedy "the first mad paroxysm past . . . he collected his dismembered philosophies and buttoned himself together." Some of our psychoneurotic patients must be told quite bluntly to do just that. And, to quote still further, they may well be asked "What is it . . . thou has been fretting and fuming and lamenting and self tormenting on account of? Is it not because thou art not happy? Because thou (sweet gentleman) art not sufficiently honored, nourished, soft-bedded and lovingly cared for?

4. Osler, William: Aequanimitas with Other Addresses, Philadelphia, P. Blakiston's Son & Co., 1930.

Foolish soul! What act of Legislature was there that thou should be happy? A little while ago thou had no right to be at all."

In the practical working out of this buttoning of oneself together, the cultivation of hobbies is most helpful. It is often difficult to find anything outside of work and family life that has ever intrigued these individuals, and in the slough of despond in which one finds them it is often next to impossible to create an interest. However, a study of the individual's mental and physical capacities should enable one to prescribe, as one would a medicine, some activity for rather serious cultivation. It is well to have two hobbies, an outdoor one involving physical exertion and an indoor one calling for some mental concentration or manual dexterity. It makes little difference what one turns to, it may be working in the garden and making a serious study of bridge, or it may be fishing and collecting stamps. The important thing is to develop some variety in the psychic diet.

PROPHYLAXIS

One should not close a discussion such as this without some general considerations of the causes of and prophylaxis against such psychic failures as we have been considering. After all it is inevitable that in this business of development and of achievement or even of mere existence we should encounter obstacles and problems and unpleasant as well as pleasant experiences. A normal response to this is a strengthening of moral fiber, mental stability and stamina. The ships that founder have some defect in their construction. Says Macfie Campbell,[5] apropos of this, "For the somatic functions to work, energy must be readily available and there must be reserves so that work can proceed smoothly and emergencies be met. Psyche too must have reserves, must have her store always readily available. It is too late, when an emergency is met, to seek for external resources. A richly stored mind is not a question of original endowment; although native ability is important it is the result of systematic industry, of careful utilization of time, of the utilization of opportunity. If, when serious demands are made, the necessary resources are not available, habits have not been formed, knowledge is absent, a code of conduct is not part of their equipment—inadequacy, inferiority, distress are the result." Let leisure time, he urges, be utilized in part to stimulate and enrich one's thought and contribute to one's philosophy of life. His idea may be summed up in the admonition "Develop your background."

I have spoken of the need for a dominant central sentiment. With such a sentiment there is no conflict or indecision as situations arise. But, as has often been pointed out by McDougall and others, this sentiment must be organized around something that cannot be lost, preferably around an ideal or rule of personal conduct. Thus one may develop the impregnable armor of self sufficiency and, though money, position, family, even reputation is lost, be invulnerable. The rules of conduct and a code of living can never be taken away and need never be lost. Strength and stability of character have these as a backlog.

THE ART OF LIVING

Having thus a strong background and a guiding motive, what now does the healthy mind seek? What is the goal? I think we normally change our course as we grow and taste of life. In early youth one usually has the urge or even the compulsion to do something worth while, to produce. With Carlyle's Teufelsdrockh, youth cries out "were it but the pitifulest infinitesimal fraction of a product, produce it in God's name, 'tis the utmost thou hast in thee; out with it then." Then, as youthful ardor cools, the gregarious instinct is likely to assert itself and the individual craves popularity and recognition. The herd instinct is strong. And finally as disappointments temper enthusiasm, as experience shows the instability of faith and dependence on others, the ultimate goal is personal happiness and independence. It has been said that true art consists in living the way you want to live and throwing aside if you wish the ways of your neighbors. And I think it is the psychologic art because it makes for peace of mind rather than for conflict and maladjustment.

It might be objected that, if all of us selfishly followed this rule of conduct, civilization would come to a standstill; but I think not. Some men are immoral and evil because they want to be, but men are also moral and honest because for them therein lies happiness. We would still have the industrious and the lazy, the economical and the extravagant, the pacifist and the militarist. In spite of utter freedom of thought and action we would still have social reformers and uplifters. In fact, the world would be about as it is now except that there would be well ordered mental objectives and a recognized art of living.

For you who are about to go out to diagnose and treat the ills of mankind, it is immaterial whether you accept the psychiatric tenets of Janet or Freud or Jung, or whether in your philosophy you follow Nietsche or James. It is essential, however, if you would be a wise physician and not merely a medical mechanic that you see in your patients more than just a bit of anatomic and physiologic machinery, and study and stand ready to mend their backgrounds, their dominating central sentiments, their philosophies of life and their objectives.

1400 Medico-Dental Building.

5. Campbell, C. Macfie: The Diet of Psyche, J. Am. Dietet. A. 12:513 (March) 1937.

Comments and Reviews

CLINICAL SENSE AND CLINICAL SCIENCE

Condensed from an article by Dr. John A. Ryle, regius professor of physic in the University of Cambridge, in the Lancet, May 13, 1939.

We have all admired in our friends or our chiefs the ability to arrive, without betraying the whole process, at wise and accurate decisions. This ability is shared by all of us in some degree, or else we are no physicians. Swift and wise decisions have a clear relationship especially to length of experience. Clinical sense is not innate or intuitive but a complex faculty built on prolonged training and exercise of the special senses, with a sound knowledge of pathologic possibilities. Observational ability and habit, a retentive memory and aptitude for sifting and correlating experience are the main ingredients of clinical sense.

Observational ability and the wit to interpret phenomena may, on occasion, lead to surprisingly prompt and exact judgments. With the clinician and the puzzling case it is not the single physical sign so much as the circumstances of the illness, the age and habitus and environmental conditions of the patient, the syndrome echoing syndromes encountered before, or even a single peculiar symptom or sign recalling the features of a single other case. These and an estimate of "the whole patient" and of his reactions to his illness may tell more in diagnosis, prognosis and treatment than the most careful examination, more sometimes than all the details of a modern "complete investigation" with its attending expense and inconvenience to the patient. Such judgments cannot be called guesswork. They are the result of a discipline of the special senses, of an observational science differing only from the discipline and science of the laboratory worker in that the observations have not been set down in orderly protocols but lodged and stored in a busy mind. For the biologist's records and methods, the physician must constantly substitute his powers of memory and association. There are some stories of Sir William Gull's consultative triumphs, in which clinical sense and common sense prevailed where the wit or industry of others had been found wanting. A surgeon had a case of ununited fracture which was giving him concern and decided one day to waylay Gull and ask his advice on the case. Gull took a look at the man and said "Feed him on tomatoes"—nothing more. The instruction was obeyed and the fracture united. When asked later his reasons for this advice, he replied that the surgeon might know all about fractures but had failed to observe that the man had signs of scurvy.

Good clinical sense seems more rare today in the field of treatment than is the case with diagnosis. The urge to action, the over-reliance on surgery, the vaccine craze, the proprietary endocrine allurements, the blandishments of the advertising chemists all have helped to lead us astray. We must feel ashamed at times of the ready susceptibility of our profession to fads and crazes in treatment. Drugs doubtful and drugs inert, drugs unorthodox and even drugs dangerous are prescribed in vast quantities and often to the neglect of sensible management and regimen or a simple psychiatry. The man with good therapeutic sense avoids pitfalls and constantly adapts his physiotherapeutic and psychotherapeutic measures to the individual case, orders a shave or a change of room at the appropriate moment in a case of long illness; knows when to give morphine and when to withhold it; when to transfuse or not transfuse; when to tease, to be jocular or sympathetic, when to exhort or scold. At the same time he keeps abreast of new advances. The oncoming generations are obsessed with treatments rather than trained and versed in Treatment. I am disturbed by a falling off in the quality and quantity, or in the diffusion of sound clinical sense, among those just referred to as "the oncoming generations." But the fault is ours and not theirs. We allow them to be embarrassed by "a crowd of scientific facts" and methods instead of teaching them their proper place and use.

What is wrong with medical education that it should, while multiplying diagnostic aids and instilling far more basic science than our fathers had, be failing in its cultivation of judgment and the faculty of perception from which judgment derives? We need not go far for the answer. The overcrowding of the curriculum and the multiplication of accessory diagnostic methods are not alone to blame. . . .

The inevitable subdivision of medicine into specialisms has broken the continuity of teaching. The value of the "general approach" to every case, whether to a patch of eczema, an enlarged prostate or an anxiety state, is in process of being forgotten. Investigation is tending to supersede and exclude instead of to supplement clinical appraisement. In his first three years the student observes and investigates too little; in his last three years, while learning to observe and investigate, he forgets his physiology and thinks too little. If we could set ourselves to the task of restoring clinical discipline to its proper place, we should go far to counteract wrong tendencies and to assist our inadequate revisions of the medical curriculum.

MEANING OF CLINICAL SCIENCE

Let us now pass from the discussion of "clinical sense" to a consideration of "clinical science."

The applications of physiology, pathology, immunology, chemistry, endoscopic technic and radiology in medicine have conferred inestimable benefits, but they have also added embarrassments and have inhibited observational precision. They have hampered the orderly evolution of clinical sense where they might have enhanced it. They have made doctors more scientific in their methods and less so in their judgments. Concurrently with these disturbing evolutionary changes we welcome today the advent of a new branch of biologic inquiry which may be called clinical science. I cannot do better than quote a part of Sir Thomas Lewis's definition:

> This science [he says] seeks by observation and otherwise to define diseases as they occur in man; it attempts to understand these diseases and their many manifestations, and here especially makes use of the experimental method. It makes definite experiments upon disease and watches the effects of experiment conducted by injuries however they arise; it culls, or actually creates and uses physiological and pathological knowledge immediately related and applicable to the diseases studied.

How can clinical science be fostered? Clinical science can be advanced wherever men of appropriate foresight and training have the time, the opportunity and the material within their reach. Sir James Mackenzie advanced clinical science in the course of a busy general practice. Men primarily engaged in practice or teaching will still make their contributions from time to time. The teaching hospitals and the professional units will make their contributions and play a useful part as training grounds for new recruits to the whole-time service of academic medicine; of necessity, however, they combine much undergraduate teaching and hospital routine with their research activities, and so their present atmosphere is not wholly favorable to scientific advancement. It would be a grave mistake for the disciples of clinical science to withdraw themselves too much into their own laboratories or to establish research institutions which would work independently of existing hospitals and university departments.

The interchange of thought and discussion of problems between the clinical scientist and the practicing physician and his assistants is one of the most hopeful developments of these innovations. The interchange of thought and partition of problems with other biologic scientists is as important. The clinical scientists must have beds of his own, not a large number, but he should be willing to confer on cases with his colleagues of the honorary staff, to stimulate their subordinates by his ideas and activities and, while nursing his own interest, to become an active member of the larger hospital family.

We may have to accept that his scientific preoccupation with his problems entails a limitation of his clinical sense. Clinical sense is born partly of long and varied association with sick men, women and children, and partly of the very nature of that relationship. However separate a disease process may be, it tends to present in different ways and to have different effects in individuals. The physician learns more clinical sense, as a rule, from his private patients than from his hospital cases. He also acquires methods of approach and management which are sometimes of particular value in clinical assessments and are, on the whole, less easily acquired by the institutional research worker. Let us accept, however, that the clinical scientist is concerned rather with processes than with persons, and that his study of processes is not necessarily hampered, as the task of the physician would be, by limiting his view.

In the selection of research personnel, can we ask promising younger men to afford the time necessary for both disciplines—that which trains for clinical sense and that which trains for clinical science?

Lewis and his co-workers at University College Hospital have chiefly carried physiologic method into the clinical field. At Cambridge it is more likely that biochemistry will implement and direct our studies in the near future. But in neither place is it likely that one science alone will be called to the aid of the research physician. In neither place will other biologic methods remove the necessity for close observational method and training. I would beg of my friends in the metropolitan schools to search their hearts in the matter of medical education and to aim at so training their students that the coming generations of clinical scientists may still retain that "faculty of perception" which has been the hallmark of English medicine from the time of Sydenham.

Biologic scientists have sometimes looked askance at the work of the clinician. They do not appreciate the countless difficulties and interruptions to consecutive thought which the practice of medicine compels. The clinician, on the other hand, has sometimes belittled the work of the laboratory man who would assist him, knowing his lack of intimacy with the problems of personality, with the variability of diseases and symptoms, and with the severe limitations set by chance. Mistrust of this kind is foolish, and all occasion for it departs when there is close association between the practicing physician and the investigator within the same building. If the first and constant duty of the physician is to improve his clinical sense, his second is to preserve the closest possible contacts with all the related biologic sciences.

When science and practice work at close quarters, both must benefit.

In spite of all our difficulties the modern evolution of medicine is intensely interesting and full of promise. But to forget the discipline that assists the faculty of perception would be a calamity for which no other discipline could wholly compensate.

EDUCATION IN OBSTETRICS FOR GENERAL PRACTICE

Abstract of an article by Prof. W. Fletcher Shaw, of the University of Manchester, and president of the Royal College of Obstetricians and Gynecologists. Published in the British Medical Journal, Sept. 2, 1939.

Every teacher agrees that medical students must begin with a good general education and a sound knowledge of chemistry, physics and biology, to which must be added a good training in anatomy and physiology and, later, in pathology. In the last three years of his training the student must learn the general principles of the main clinical branches and how to apply the scientific knowledge he has previously acquired. He must be trained to elicit clinical facts by exact methods of examination and to piece these together. Thus he learns to observe, deduce and think. There can be no attempt to teach him all that is known in any one branch: that leads to confusion. Teachers must confine themselves to principles and should emphasize the interrelation between their own and other branches of medicine.

Given this sound foundation, the medical student is trained to remain a student all his life, capable of understanding and applying the advances which will be made and of adding to them himself. The young graduate is the product of the whole school and not of any one teacher, and it is only by cooperative effort of the whole teaching staff that a school fulfils its highest duty.

OBSTETRICS AND GENERAL MEDICAL TRAINING

Unlike other departments, obstetrics deals chiefly with physiology and for this reason alone would be worthy of a place in the curriculum. Another advantage is that in many schools obstetrics provides the only compulsory period for students of residence in the hospital. The main purpose of this is to teach the student obstetrics, but in a good hospital he will learn much more. Seeing the patients at all times of the day and night will develop his powers of observation; he will have impressed on him in the antepartum department the necessity of knowledge of general medicine and general surgery as well as of obstetrics; if he also attends domiciliary midwifery he will learn more of human nature and the handling of patients than in the whole of the rest of his medical course.

Some day we may waken to the great importance of this resident work and, by cooperation with hospitals, make the last year of the course a resident one divided between medicine, surgery and obstetrics, with gynecology, and unburdened by the paralyzing effect of the final examination.

Pregnancy, labor and the puerperium are normal physiologic processes with a liability to develop varying degrees of abnormality. The whole effort of the antepartum department is to recognize and treat these abnormalities. Recognized beforehand and the appropriate measures decided on, few labors present any serious difficulty, while the same complications discovered only during the course of labor will often have a fatal termination for mother and child. In the antepartum department the student sees and examines large numbers of patients in normal health and learns to recognize any divergence from this state. Those who suffer from complaints during pregnancy he sees treated in that department or in the wards, and he soon realizes the value of early recognition and treatment. In the gynecologic department he learns that a large number of these patients suffer from troubles produced at childbirth and that many of these are preventable; while in the children's department he will see many victims of heredity, bad environment and obstetric miscalculations.

DIFFICULTIES IN TEACHING OBSTETRICS

One of the main difficulties, and one which can never be overcome, is that the onset and duration of labor cannot be controlled. It is therefore impossible to hold labor ward demonstrations at prearranged times, and the teaching on normal delivery must be left to junior members of the staff. Even the cases requiring major obstetric operations must, to a large extent, be left to the younger members. The professor of obstetrics is therefore in the same position for clinical teaching as would be the professor of surgery if the major part of his teaching was limited to emergencies.

Another difficulty which is rapidly disappearing is the misconception of the lay public that every qualified practitioner is a fully trained obstetrician capable of carrying out any obstetric operation. This leads to the worst evil of all—that the local reputation of a practitioner as an obstetrician depends chiefly on the speed with which he terminates his cases. The aim of the obstetric teacher is to turn out qualified practitioners who have a sound knowledge of normal midwifery. They must be able to recognize the abnormal and to deal with minor abnormalities. Unless they have resident postgraduate experience it is not their business to perform major obstetric operations. A further difficulty is the way in which gynecology has developed and the tendency for the surgeon to consider it a branch of general surgery divorced from obstetrics. These subjects can never be

divorced. They are indivisible and between them embrace the study of a group of organs in health and disease. A knowledge of general medicine is required as much as that of general surgery. No one can be a gynecologist who has not obstetric knowledge of physiologic changes in these organs; no one can be an obstetrician who has not gynecologic knowledge of the accidents and diseases to which they are heir.

Teaching facilities and hospital accommodation in obstetrics and gynecology have lagged far behind those of general medicine and surgery, and only in recent years has a demand been made that these should be adequate. While in some schools the hospital accommodation is still deficient, it is gradually being overcome. The facilities for teaching clinical obstetrics have greatly improved in the last few years. The student should understand, however, that the amount which can be taught him is limited and that this cannot include operative obstetrics.

As most gynecologic ailments date from a confinement or miscarriage, it is essential that this fact be taught along with obstetrics, as only thus can the student realize the remote effects of bad midwifery, which must be taken into consideration when deciding on any gynecologic operation. The teaching of operative gynecology is not part of a student's course.

CLINICAL WORK

Two much emphasis has been laid on didactic teaching. Students have not been left sufficiently to ferret out facts for themselves and so develop the most important gift of the medical practitioner—that of observation. But the pendulum swings too far when it is suggested that systematic lectures be abolished. In obstetrics, systematic lectures are essential. Unless the student has a sound knowledge of anatomy and physiology and of the mechanism of labor he can never understand what is then happening and so be able to recognize when the normal passes to the abnormal.

LIVING IN A MATERNITY HOSPITAL

The General Medical Council regulations require that each student shall live in a maternity hospital for two months, and this is the most valuable experience in his career. He lives in a midwifery atmosphere, hears cases discussed by the residents, sees his cases night or day and is not hurried from one department to another. During this time he must himself conduct twenty cases. This unfortunately tends to overestimate in the student's mind the importance of this part of labor, and the teacher must be ever vigilant to counteract the impression that the moment of birth is the only, or indeed the most important, part of obstetrics. Frequent attendance at the antepartum clinic should be insisted on. Here the student must learn abdominal palpation; to recognize contraction of the pelvis, especially in its minor degrees; to study the patient's general health, and to give advice on diet and general rules of life; and to realize the importance of regular examination of the urine and of taking the blood pressure. His labor cases should, if possible, be attended equally in the wards and in the patients' homes. The student must realize that labor starts with the first uterine contraction and that the obstetrician's knowledge and skill are called for more frequently before than when the child is actually coming over the perineum.

In the two months residence it is impossible for him to attend the same cases in the antepartum department and in the labor wards, but he should see his patient as soon as she is admitted and he should be allowed to examine her along with the house surgeon. From then until delivery the student should pay her frequent visits and be taught to recognize normal from abnormal contractions, advancement, termination, and the condition of the patient. In this way only will he learn that the use of forceps is not decided merely by the number of hours in labor and the desire of the patient and friends for its termination. In the puerperium he should pay daily visits and be taught to observe the progress of involution, signs of abnormality in the patient, state of the breasts, and progress of the baby. It is a wonderful opportunity to instil into him the necessity of observation.

In his first ten deliveries attended in the hospital labor wards he has learned to maintain scrupulous asepsis. With everything ready at hand in a modern hospital this is relatively easy. The remaining ten cases must be attended with an equally rigid asepsis but in much more difficult surroundings. With more thought and trouble the same degree of asepsis can be obtained, but the student has to realize what are the essentials on which he must concentrate. To the student the chief advantage of the district cases is the daily attendance during the puerperium. These visits should be made by the student alone and he should be encouraged to record daily all the essential points—temperature, pulse, lochia, involution, sleep, bowels, breasts, baby—and to report to a senior officer any divergence from normal. By bringing him into contact with patients and their families in their own homes he will get his first lesson in one of the most valuable and difficult arts—the tactful handling of patients.

GYNECOLOGY CANNOT BE DIVORCED

The teaching of clinical gynecology is much easier than the teaching of obstetrics. As in medicine and surgery the patients come to outpatient departments at regular hours and are admitted to wards and operated on on regular days. Classes therefore can be organized in outpatient departments, wards and operating

rooms. There is one important barrier to teaching. Generally, a medical or surgical case can be examined by a number of persons and, if the diagnosis is in doubt, can be examined time after time. Not so a gynecologic case. The number of examinations made in each is limited. The practitioner must be taught that one physical examination must suffice. This means that the history of the case must be taken very carefully and each point considered in relation to the others, so that the gynecologist must have in mind what conditions could produce these symptoms in a woman of that age and history. In other words, his physical examination must be a differential diagnosis between the possible causes. Without this careful digestion of the history, physical signs are of little value. It is therefore of prime importance that the student should have beds allotted to him, should take careful notes of each patient and should be taught to find the possible diagnosis before an examination is made.

During the whole course of gynecology, emphasis must be placed on the interrelationship of obstetrics and gynecology, especially on the fact that many of the conditions found in the gynecologic department date from a confinement or miscarriage and that many of these could have been avoided.

If it is possible to arrange that one month of the six is spent in the children's department, especially when it has beds for infants, the student will be taught to consider the child in the antepartum department, the labor ward, the maternal cot, the babies' ward and, finally, the children's ward—a continuous picture of this ever changing subject. He will realize that an obstetrician's duty is not merely to produce a living child but that both mother and child must be left at the end of the puerperium in a perfectly healthy condition—the one to take her place in life unhampered by physical disability, the other to grow into a healthy citizen.

BEDSIDE LIBRARY FOR MEDICAL STUDENTS

From "Aequanimitas and Other Addresses," by William Osler.

A liberal education may be had at a very slight cost of time and money. Well filled though the day be with appointed tasks, to make the best possible use of your one or of your ten talents, rest not satisfied with this professional training, but try to get the education, if not of a scholar, at least of a gentleman. Before going to sleep read for half an hour, and in the morning have a book open on your dressing table. You will be surprised to find how much can be accomplished in the course of a year. I have put down a list of ten books which you may make close friends. There are many others; studied carefully in your student days these will help in the inner education of which I speak:

I. Old and New Testament.
II. Shakespeare.
III. Montaigne.
IV. Plutarch's Lives.
V. Marcus Aurelius.
VI. Epictetus.
VII. Religio Medici.
VIII. Don Quixote.
IX. Emerson.
X. Oliver Wendell Holmes—Breakfast-Table Series.

TESTS FOR SYPHILIS AMONG COLLEGE STUDENTS

A study prepared by the U. S. Public Health Service, based on blood tests of 78,388 undergraduate students in 515 American colleges, indicates that two out of every thousand students examined are infected with syphilis. This rate is practically the same as that of non-college people of the same age. For the general population of the country, the rate of infection in the age group 15-19 years, based on estimates of the U. S. Public Health Service in November, is about 1.8 per thousand. The apparently higher college rate results from including an unknown number of students in higher age groups up to 24 years in the present survey. Other results of the survey indicated about 15 per cent less syphilis among college women than among men, a difference which it is said parallels the nation-wide prevalence rates by sexes. There was also found a slightly lower rate among college women than among women of the same age group in the population at large. However, little difference was shown between one region in the United States and another for either sex, or between the rates for schools with large as compared to small student bodies. Of the 515 institutions participating in the survey, 219 have facilities for testing the blood of students. Since blood testing in colleges when given are usually made on freshman students, the great majority of those tested were in the age group of 15-19. Two thirds of the college authorities approached in this survey believe that some method of testing the students for syphilis is desirable. A fair proportion of them, however, are still of the opinion that syphilis is bounded by class or racial lines and hence think that blood testing is unnecessary in colleges.

The Strenuous Life.—I wish to preach, not the doctrine of ignoble ease, but the doctrine of the strenuous life, the life of toil and effort, of labor and strife; to preach that highest form of success which comes, not to the man who desires more peace, but to the man who does not shrink at danger, from hardships or from bitter toil, and who out of these wins the splendid ultimate triumph.—*Theodore Roosevelt.*

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Scholarship—Young Applicants Preferred

The award of the Lewis Cass Ledyard Jr. Fellowship is expected to be made by April 1. Applications should be addressed to the Committee of the Lewis Cass Ledyard Jr. Fellowship, The Society of the New York Hospital, 535 East Sixty-Eighth Street, New York City. Preference will be given to young graduates in medicine who have demonstrated fitness to carry on original research. The income, amounting to about $4,000 a year, will be awarded to investigators in the fields of medicine and surgery or some closely related field. About $1,000 of this amount will be applied for supplies or expenses of the research and $3,000 as the stipend. The research work is to be carried on at the New York Hospital and Cornell University Medical College.

Meetings in the Homes of Faculty Members

The Scientific Forum, which is another activity of the Student Activity Plan at Tufts College Medical School, Boston, which meets in the homes of various physicians on the faculty, met January 28 at the home of Dr. Siegfried Thannhauser. Papers were presented by Mr. Thomas F. Broderick Jr., '41, on the use of the x-rays in acute abdominal conditions, and by Miss Marguerite L. McKay, '41, on sterility in the female. The society met at the home of Dr. Louis E. Phaneuf, February 11, when Mr. Peter S. Zarecki Jr., '41, read a paper on anemias of pregnancy, and Mr. John J. Talinski, '41, on displacements of the pelvic organs following childbirth. Later in February the forum met at the home of Dr. Benjamin Sachs, when two papers on ophthalmology were presented by Mr. Edward Joseph Howley, '41, and Mr. Paul J. Coughlin, '41.

Harvard Expands Work in Legal Medicine

The dean of Harvard University Medical School, Boston, Dr. C. Sidney Burwell, announced, January 26, in his annual report that Harvard University Medical School has undertaken expansion of its work in legal medicine and will train a small number of men who desire to specialize in that field. The Harvard Law School is cooperating in the expansion, the two schools offering a course for undergraduate medical students, giving a survey of the field of legal medicine and the essentials of medical jurisprudence. New laboratories are being set up for this department in that portion of Harvard Medical School in which there is already located the George Burgess Magrath Memorial Library of Legal Medicine. Dr. Alan R. Moritz, who spent the last two years abroad studying the organization and practice of legal medicine in European countries, will be in charge of the department. He is the first to hold the professorship of legal medicine established at Harvard in 1936 in honor of the late Dr. George Burgess Magrath, pioneer in this field. Dr. Moritz was formerly chief pathologist at the University Hospitals, Cleveland, and associate professor at Western Reserve University. This department will also provide an interesting example of cooperation among the three medical schools in Boston, as the lectures will be attended also by third year men from Tufts Medical School, and next year it is expected that medical students from Boston University will also participate.

Loan Fund for Students at Colorado

Dr. Frank W. Kenney, Denver, has presented to the University of Colorado $3,000 in the form of 4½ per cent bonds of the Pennsylvania Railroad to constitute a loan fund, the income of which is to be used to assist worthy students in the medical school. Preference is to be given to eager and ambitious boys in the junior and senior years, although the donor's preference is not to be considered mandatory. Loans are to be at a moderate rate of interest and are not required to be evidenced by a legal obligation payable at a given time. The student will, however, agree to repay the loan as soon as he can. Selection of students who shall receive such loans will be made by a committee of three, which at present comprises Drs. James J. Waring, George B. Packard and Casper F. Hegner, all of Denver. Vacancies in the committee will be filled by the trustees of the Medical Society of the City and County of Denver.

Scholarships Awarded at Columbia

Dean Willard C. Rappleye, of Columbia University School of Medicine, New York, announced October 19 the award of scholarships for the present academic year to the following students, among others. The winners received their premedical training in various colleges and universities in many different states and Puerto Rico. William J. Welch, of Yale, won a grant of $900, and Alando J. Ballantyne, University of Arizona, $600. Among those awarded resident scholarships of $500 each were: Carroll L. Conley, Johns Hopkins; Fred M. Davenport, Columbia; John J. Hutchinson, University of Illinois; Wilson W. Schier, Lawrence College; Freeman Irby Stephens, Columbia; Abraham Geffen, Emory; Virginia M. Goddard, Tufts; George L. Hawkins Jr., University of Missouri; Milton B. Smith, University of California; Howard A. Blazar, Brown; Stanley W. Burwell, Columbia; Thomas P. Hennelly, Holy Cross; Bayles R. Kennedy, University of California; Eugene C. McCann, Tufts; William G. Schoch, University of Arizona; Roland G. Tremblay, University of New Hampshire, and Orrin J. Van Dyk, Harvard.

Among those awarded scholarships of $500 each were: William T. Adams, Utah State; Archibald G. Fletcher Jr., Princeton; Fay P. Greene, Southwestern; Louis Nash, University of Nevada; William E. Owen, Cornell College, Mount Vernon, Iowa; David T. Dresdale, Brown; Irvin H. Trincher, New York University; Aldred Duschatko, Columbia College; John Milne, Dartmouth; Theodore Gold, Columbia College; John Dean, Yale; Edward H. Townsend Jr., Harvard; Alden K. Boyd, Cornell; Gustav Bansmer, Columbia College.

Stuart W. Cosgriff, Holy Cross; Paul A. Kirschner, New York University; Charles G. Zubrod, Holy Cross, were awarded scholarships of $400 each, and Kenneth B. Wright, Columbia College, and John J. Ryan, New York University, scholarships of $350 each.

Christmas Party at Louisiana

The first Christmas party in the history of the School of Medicine of Louisiana State University, New Orleans, was held December 22 when faculty members, secretaries, technicians, and others on the staff, met in the library which was decorated for the occasion. Dr. Charles Midlo, master of ceremonies, made "a highly amusing opening talk." A sextet including

among others Drs. W. K. Hall, bass, and Edgar Hull, tenor, sang; candy and punch were served and there were gifts for each one present. At the conclusion of the party, Dr. B. I. Burns, dean of the school, made a speech and announced that the Christmas holidays for all the staff members would extend from Friday evening until Wednesday morning after Christmas.

The Ephraim McDowell Memorial Home

The Kentucky State Medical Association dedicated in Danville in May the home of Ephraim McDowell, in which house he performed the first ovariotomy in 1809 (Student Ephraim McDowell, THE JOURNAL, Dec. 24, 1938, p. 2441). Dr. Charles A. Vance, Lexington, chairman of the council of the Kentucky State Medical Association, presided at the dedication, and Dr. Irvin Abell, Louisville, past president of the American Medical Association, gave the principal address. The home was accepted for the state by Governor A. B. Chandler. Dr. Edward P. Heller, Kansas City, Mo., represented the Missouri State Medical Association at the dedication. Dr. Edward V. M. Mastin, St. Louis, the great-great-grandson of Ephraim McDowell, who represented the Southern Surgical Association, and Dr. James D. Hancock, Louisville, acting president of the Kentucky State Medical Association, were among the speakers. Dr. Louis Frank, Louisville, past president of the Kentucky State Medical Association, presented to the home the Arch Barkley Memorial Gifts. The home and its treasures, including among other things the surgical instruments used by McDowell, then passed into the keeping of the Department of Parks of Kentucky. Here is not only the room in which McDowell operated on Mrs. Jane Todd Crawford, but the old well in the garden, the servants' quarters, the kitchen and the now famous door knocker which was used by patients in all walks of life, including James K. Polk, who later was President of the United States.

Annual Meeting of Association of Students

Including delegates, visitors and observers, about 300 persons attended the fourth annual meeting of the Association of Medical Students in Detroit, December 27-29. The delegates represented some twenty American medical schools. The present paid up membership of the Association of Medical Students is said to be about 2,400. At this meeting, Thomas L. Perry Jr., Harvard Medical School, '40, was elected president. The vice presidents elected were Leopold M. Trifari, Tufts College Medical School, '42; Edmund M. Braun, New York University College of Medicine, '41; Jane B. Oldden, Woman's Medical College of Pennsylvania, '41; Joseph H. Hafkenshiel Jr., Johns Hopkins University School of Medicine, '41; John H. Cordes Jr., Emory University School of Medicine, '41; Paul H. Gray, Rush Medical College, '41; Thaddeus J. Bugelski, University of Buffalo School of Medicine, '41; Henry A. Caraco, Washington University School of Medicine, '41; William M. Christophersen, University of Louisville School of Medicine, '42, and Charles Roberts, of the Royal College of Edinburgh. Clifford A. Sager, New York University College of Medicine, '41, was elected chairman of the editorial board of the *Journal of the Association of Medical Students*, and Herbert F. Waldhorn, New York University College of Medicine, '42, editorial director.

Among the resolutions adopted was the following concerning student aid:

WHEREAS, The high cost of a medical education makes it difficult for many students to equip themselves completely, this convention reaffirms its stand on supporting local efforts "in the establishment of scholarships, student loan funds, and other methods of meeting the problem of the tremendous cost of medical education."

A spontaneous movement arose among the medical students at this meeting suggesting the possible fusion of the Interne Council of America with the Association of Medical Students, but final official action was not taken at this meeting.

At this meeting, the American Youth Congress extended to the Association of Medical Students an invitation to become a cooperating organization. After a spirited discussion a decision was reached to have local chapters of the association cooperate with the American Youth Congress in their locality and also to have the lay education committee of the Association of Medical Students continue its cooperation with the American Youth Congress without having the Association of Medical Students constituted a cooperating organization with the American Youth Congress.

The delegates made a tour through the River Rouge plant of the Ford Motor Company. On the second day a special feature was the presentation of the prize winning clinics conducted under the auspices of Wayne University chapter of the association. One of these was a colored movie of the "Physical Diagnosis and Examination of the Skeletal Musculature," prepared by Fred Margolis, '40, and a group of members of the association from Wayne University, and the other a model surgery clinic presented by Kenneth Campbell, '40, and another group of Wayne students. In addition to these demonstrations there was a program of clinics at the medical school amphitheaters.

Tufts Plans Revision of Premedical Course

Revisions in the premedical studies have been planned jointly by the chemistry and biology departments at Tufts College, Medford, Mass., and are expected to be ready to go into effect next fall, the New York *Times* reports. The chief objective of the curriculum is not only to give future medical students the best possible training for professional study but also to allow them greater latitude as undergraduates for cultural development. One of the most significant changes will be the elimination of the departmental majoring, as such, in chemistry and biology. The new plan will attempt to correlate the undergraduate work in college, wherever possible, with the course of study in the professional or medical school. It has been planned so that all the requirements will be completed in the first three years; the fourth year will be left free for electives, either in additional scientific study or, as the faculty would prefer, in cultural subjects. It is also planned to have premedical students advised by six men, three each from the departments of chemistry and biology, whereas at present these students are advised only by the head of the department.

Fees at Oregon

Fees and deposits paid by students at the University of Oregon Medical School, Portland, according to the catalogue of the school, are as follows:

Regular Fees	
Matriculation fee (not refundable)	$ 5.00
Resident tuition and laboratory fee, per term	95.00
Nonresident tuition and laboratory fee, per term	115.00
Building fee, per term	5.00
Deposits	
Deposit to reserve place in entering class	$ 20.00
Breakage deposit—first and second years	15.00
Breakage deposit—third and fourth years	10.00
Special Fees	
Graduation fee	$ 6.50
Late-registration fee	$1.00 to 5.00
Penalty for late payment of tuition fees (full payment)	minimum 2.00
Transcript fee	1.00

Vote to Drop the M.B. Degree

At a meeting of the entire student body of the school of medicine of Louisiana State University, New Orleans, in the assembly hall of the new Charity Hospital, the dean announced that the executive committee of the school of medicine has approved a proposal to confer the M.B. degree on graduates no longer but to grant the M.D. degree on the satisfactory completion of the fourth year. The Executive Committee felt that the action of the Louisiana State Board of Medical Examiners in requiring a year's rotating internship of all candidates for licensure in Louisiana makes it unnecessary for the school of medicine to require this service before it confers the M.D. degree. According to the *Tiger*, the Executive Committee will recommend to the administration of the university that the change become effective this year.

Equipment Required at Stanford

Medical students at Stanford University School of Medicine, San Francisco, are required to have the following equipment:

SECOND YEAR STUDENTS

Stethoscope (Ford)
Percussion hammer
Hemocytometer
Hemometer
Metal tape measure

THIRD YEAR STUDENTS

Sphygmomanometer (Tycos)
Ophthalmoscope
Otoscope
Head mirror 3½ inch diameter and one-half inch aperture and band
Nasal speculum (Vienna model)
Nasopharyngeal mirror No. 0
Laryngeal mirror No. 4
Ear speculums (Toynbee, nest of three)

Premedical News

Dr. Robert U. Patterson, formerly Surgeon General of the U. S. Army and now dean at the University of Oklahoma Medical School, Oklahoma City, was the principal speaker at a meeting of the Oklahoma Alpha chapter of Alpha Epsilon Delta, an honorary fraternity for premedical students, in Oklahoma City, December 7. His subject was "The Fields of Medicine Open to the Young Doctor"; other speakers at the meeting were Samuel W. Reaves, dean of the School of Arts and Sciences, whose subject was "The Layman's View of Medicine," and J. T. Self, who spoke on "The Status of the Premedic." Seventeen Oklahoma students were initiated into the local chapter on this occasion. On November 7 the Alabama Alpha chapter of this premedical fraternity awarded a sliver cup to Harry O'Rear, of Jasper, Ala., for having made the highest average in biology and chemistry during his freshman year.

Scholarships and Prizes at Wayne University

The Alumni Association of Wayne University College of Medicine, Detroit, has subscribed an endowment fund that provides for research grants, student loans and scholarship prizes. Undergraduate scholarships are granted to a number of deserving students on a student loan basis, after investigation by a special scholarship committee in conjunction with the board of trustees of the alumni association. Applications must be from the junior and senior classes. The Alumni Association gives a prize of $50 to the senior student who has the best scholarship record through the four years. The Alumni Association also offers an annual prize of $50 for the best scientific work done during the year by a recent graduate.

Dr. Ranson Will Give the Dunham Lectures at Harvard

Harvard University, Cambridge, Mass., announces that a series of Edward K. Dunham lectures will be delivered at the medical school, March 4, 6 and 8, by Dr. Stephen W. Ranson, director of the Neurological Research Institute at Northwestern University Medical School, Chicago. All members of the medical school and other interested professional persons are invited. Dr. Ranson was head of the department of anatomy at Northwestern University Medical School from 1912 to 1924, was head of the department of neuro-anatomy and histology at Washington University Medical School, St. Louis, from 1924 to 1927, and then returned to Northwestern University Medical School. Dr. Ranson is a member of the editorial board of the *Archives of Neurology and Psychiatry*, which is published by the American Medical Association, and is the author of a well known book, "The Anatomy of the Nervous System."

Scholarships and Assistantships at St. Louis University School of Medicine

Students showing special proficiency in the first two years at St. Louis University School of Medicine, St. Louis, are eligible for appointments as assistants, who take part in teaching and research under the supervision of the departmental director. To be appointed to an undergraduate assistantship, the applicant must agree to accept the appointment for four years and to devote half of his time to assigned duties in a chosen department. The students so appointed rank as junior assistants during the first two years and as assistants during the third and fourth years. The appointee is free from tuition for the four years and receives an annual salary ranging from $250 to $350.

The Dr. Samuel T. Lipsitz Scholarship of $150 a year is awarded to a selected student. The Levi and Peppe Wolfert Scholarship is awarded annually for the purpose of assisting a needy student and also to help in developing a specially gifted one.

The Rose Bernanke Student Aid Fund awards $50 a year to a student in need of special assistance.

In addition, St. Louis University School of Medicine offers a number of graduate fellowships in the basic sciences and in the clinical sciences. Inquiries concerning these matters should be addressed to the Dean of St. Louis University School of Medicine, St. Louis.

Scholarships at Yale

Certain Yale University funds are available in part for financial aid to students in the school of medicine. Some of the scholarships available are as follows:

The Judson Bardwell Memorial Scholarship.
The Edward Thomas Calhoun Scholarship, for work in pathology.
The Annie G. K. Garland Memorial Scholarships. Awarded to worthy students in the graduate and professional schools of the University who are chosen primarily because of their ability, character and promise of future usefulness and the quality of their work.
The James Raymond Goodrich Memorial Scholarships.
The Joseph Hendley Townsend Scholarship.
The Flora Adler Ullman Memorial Scholarship Fund.
The Rosa Verdi Scholarship.

Lecture to Marquette Students

Dr. Julius Bauer, clinical professor of medicine at Louisiana State University School of Medicine, New Orleans, and formerly of Vienna, addressed the students of Marquette University School of Medicine, Milwaukee, January 23, and also gave the Louis M. Warfield Memorial Lecture in Milwaukee, sponsored jointly by the Milwaukee Academy of Medicine, the Milwaukee Internists' Club and the Wisconsin Anti-Tuberculosis Association.

Repercussions of International Events

The regular student body of Harvard Medical School, Boston, shows some repercussions of international events, with a slight drop in numbers registered from Canada and China. In recent years there has been an increase in the number of men from the Latin American countries. The student body of 522 has men from Argentina, Guatemala, Colombia, Canada, South Africa, Siam and Germany; last year there were two men from Finland in the student body, two from France, three from Belgium, four from London and one each from Germany, China, Wales, Hungary and Chile.

Tulane Students Honor Retiring Dean

A meeting of the student body of Tulane University School of Medicine, New Orleans, and the faculty members was held January 27, in the Richardson Memorial building to honor Dr. Charles C. Bass on the eve of his retirement after eighteen years of service as dean of the medical school. On behalf of the students, Edward R. Villemez, president of the student body, presented a portrait of Dr. Bass to the university. Following the student's meeting, the faculty attended a luncheon where Dr. Rudolph Matas, professor emeritus of surgery, presented to Dr. Bass a scroll from the faculty. Dr. Bass is a native of Mississippi and graduated from Tulane University School of Medicine in 1899, joining the staff in 1904. In 1912 he went to Panama on an expedition, under the auspices of the department of tropical medicine, to continue his studies on malaria. He is said to have been the first successfully to cultivate the malaria parasite in vivo. He has done research also on hookworm, pellagra, beriberi and typhoid fever and is still active in research work. Dr. Bass has been president of the American Society for Clinical Investigation, the American Society of Tropcial Medicine, and the Southern Medical Association. He was awarded the honorary degree of doctor of science by the University of Cincinnati in 1920 and the honorary degree of doctor of laws by Duke University in 1937.

Loan Funds at the University of Tennessee

The University of Tennesse College of Medicine, Memphis, has several loan funds whereby small sums may be lent to worthy students who have demonstrated their scholastic competency. A prize known as the Faculty Gold Medal is awarded each year to the graduate whose general record throughout the twelve quarters' course has been most satisfactory. There is also the Judge H. T. Ellett Scholarship, which is intended to make possible the study of medicine for some worthy Mississippi student who otherwise would not be able to pursue this work. Applications should be made to the office of the dean.

Medical College Restores Original Building

Founders Day at the Medical College of Virginia, Richmond, January 16, was marked by the dedication of the Egyptian Building, the first permanent home of the school, which has been recently restored. The college opened its doors in 1838 in an old remodeled hotel, but in 1845 a new building done in the Egyptian manner was completed and dedicated. After continuous use since its dedication the building had fallen into disrepair. Through the generosity of Mr. Bernard Baruch, New York, the building has been reconstructed. A new auditorium has been named for Mr. Baruch's father, Dr. Simon Baruch, who graduated from the school in 1862. The auditorium and the lobby on the first floor are in Egyptian design. The upper floors are arranged for the departments of bacteriology and pathology for teaching, diagnosis and research. The program for the dedication included addresses in the morning by Drs. Walter H. Judd, until recently a missionary in China, on "Chinese Medicine" and Wyndham B. Blanton, Richmond, on the history of the Egyptian Building. In the afternoon the Brown Séquard Society presented Dr. George W. Thorn, Baltimore, who spoke on "Studies of the Adrenal Cortex" in the new auditorium. The evening program consisted of an address at the Richmond Academy of Medicine by Elmer V. McCollum, LL.D., Baltimore, on "The Place of Vitamins in the Maintenance of Normal Health."

Average Expenses at University of Chicago

An estimate of the average expenses in attending the medical schools at the University of Chicago for each quarter includes: rent and care of room, $60; board, $82, textbooks and supplies, $25, laundry and cleaning, $25; registration and health service fees, $6, and incidentals, $35, making a total of $233, exclusive of tuition fees, which are $150 a quarter.

Temple's Student Body

The current enrolment at Temple University School of Medicine, Philadelphia, totals 446 students from twenty-six states, Puerto Rico and Hawaii and represents 148 colleges. Physicians have enrolled seventy-one of their sons and daughters in the medical school. Of the 446 students, twenty-three are transfers from two year medical schools; thirty of the students are girls.

Dr. Keeton Elected to National Board of Examiners

Dr. Robert W. Keeton, Chicago, professor of medicine, University of Illinois College of Medicine, has been elected a member of the National Board of Medical Examiners to succeed the late Dr. Charles A. Elliott. Dr. Keeton is one of the first diplomates of the board, holding certificate No. 25. He graduated from Northwestern University Medical School in 1916.

Scholarship Fund at University of Georgia

The Charles McDonald Brown Scholarship Fund is available to students at the University of Georgia School of Medicine, Augusta, for the purpose of aiding them in defraying the expenses of their education. The interest on this fund is lent to worthy young men on condition that they obligate themselves to return it with 4 per cent interest.

Wisconsin State Board Questions

The following questions in surgery were given at the examination held in Milwaukee, June 27-30, 1939, by the Wisconsin State Board of Medical Examiners:

1. What facts are necessary to diagnose stone in urinary tract? Give treatment.
2. Why are fractures of pelvis serious? Briefly summarize treatment.
3. Describe in detail your surgical treatment of severance of all tendons on anterior side of wrist.
4. Discuss carbuncle—cite common locations—dangers and surgical treatment.
5. How would you prepare skin for a major abdominal operation? How would you prepare your own hands for the same job?
6. What is gas gangrene? Discuss cause, pathology and treatment.
7. Give the causes, symptoms and treatment of septic peritonitis.
8. In skull fractures, give symptoms, dangers. Discuss briefly your management thereof.
9. Discuss pleurisy with accumulation of pus. Give treatment.

Only eight of the nine questions were to be answered.